

The Iron Age

A Review of the Hardware and Metal Trades.

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Testing Machine for the School of Mines.

The accompanying illustrations represent the testing machine manufactured by Messrs. Fairbanks & Co. for the School of Mines, Columbia College, and exhibited at the late fair of the American Institute.

The scale is composed of a series of multiplying levers, having a beam similar to the ordinary platform scale. It also has a combination of gears and screws, so arranged that by turning a hand-wheel the pressure or strain is applied to the platform through the specimen which is being tested. This, of course, causes the beam to rise, when, by an arrangement of clock-work, the poise is moved to a point on the beam indicating the number of pounds strain or pressure on the specimen. When this point is reached the beam drops and the poise remains at the point where it is when the beam commences to fall. If more strain is then applied the beam again rises and the poise moves on as before, and so on, until the specimen is crushed or broken, when the figures on the beam at which the poise stops indicate the exact number of pounds strain or pressure at which the specimen gave way. The parts of the apparatus shown in Fig. 1 are arranged so that not only pressure but tension may be applied to any specimen under examination. The ingenious arrangement by which the poise is made to advance when the beam rises, and to stop when the beam falls, is shown in Fig. 2, in which A is the rod which connects the beam with the multiplying levers, B is a sliding poise, which, in the use of the machine, is set to a point that, in the judgment of the operator, approximates nearly to, but does not exceed, the measure of the stress desired to be applied to the material under examination. When this is done, and the stress is applied to the substance to be tested, the beam will rise. In so doing, the lever, C, engages a stop at D. This lever being pivoted at E, its inner end will be made to rise by its engagement with D, and, in so doing, the rack teeth formed on the inner arm of the lever, C, are made to disengage from one of the toothed wheels of a train of clock-work. The weight, F, then begins to descend, and being connected by a cord with the clock work, and through that to the poise, G, the latter is made to pass out toward the end of the beam. The clock work is attached to the end of the beam itself, and vibrates with it. The office of the clock work is simply to retard the motion of the weight, so that it shall run down slowly and move the parts, G, slowly toward the end of the beam. To this end the clock work drives a fly, H, similar to the fly used to retard the motion of the striking weight in common clock work. As soon as the bar begins to descend the lever, C, which is counterpoised on its inner end, drops by its own weight, and, stopping the clock work, leaves the poise, G, where it is at the time the beam begins to descend.

The Iron Industries of Wilmington.

The report of the Wilmington Board of Trade for 1873 contains the following:

IRON SHIPBUILDING.

Whatever depression may have been felt in other branches of our business, this one has been uniformly active and successful; our yards have been constantly and fully employed, and the prospect is good for the future.

Wilmington has cause to be proud of the success of her iron ship builders, who were the first in the field in this country, and who have been uniformly successful in building ships, that have, in all emergencies, proved themselves staunch and reliable. From a comparatively small beginning, this has grown to be one of our largest and most successful industries. With its prosperity, we have prospered; and when it has been dull (as it seldom has) our other business has felt it, decidedly. The number of mechanics and tradesmen engaged in building and supplying these steamships is so large and varied that the interest in the success of this branch is general rather than confined to the proprietors of the ship yards themselves; and while the business has been carried on without the noise and show that so generally accompanies enterprises of this kind, yet its success has been of that permanent nature that will, in all probability, keep it in successful operation when more pretensions, but less capable, establishments shall be reckoned among the things that were. There is probably no branch of business carried on in this part of the country which engages so much attention as this, and upon which the future of our mechanical classes so largely depends. So soon as it is demonstrated that we can successfully compete with the Clyde builders, in the production of iron steamships, as to cost (for we already excel them as to quality), there will be removed to our shores one of the most profitable and extensive branches of industry in the world—affording employment to thousands of heads of families, and encouraging the manu-

facture of immense quantities of iron. The proprietors of these ship building establishments hold in their hands, to a greater degree than the same number of men in any other business, the future of our city—their success is our success, in a material point of view. Judging the future by the past, the problem is in safe hands, and, unless the appearances in the old world are very deceiving, we shall not have to wait long to see the price of iron in the two countries brought near enough together to

and wealth, the enormous quantities of agricultural products, that its rich, inexhausted soil annually yields for Eastern and foreign consumption, must be brought to the seaboard for use, for shipment and exchange. Merchandise and machinery must go back and the population must be moved speedily and comfortably; these facilities for transportation must increase with the growing demands of the country. More lines must be built, and more cars to stock them. Private enterprise can do

not too much, we think, to claim that the persistent efforts of this Board to attract attention to the advantages our city offers for this industry, have produced good results. In addition to the extensive works at Edge Moor, to which allusion has been made in preceding reports, we have to record the foundation of two more large enterprises of a somewhat similar nature in our city limits; namely, the extensive works already begun by the McCullough Iron Company, on the property known as "the

at low rates for a term of years, to locate on the line of some one railroad, away from the reach of competition, have learned by bitter experience, after the term expires, that they paid dearly for the gift, and that their new tariff of rates soon made the first one very high; but this knowledge always comes too late for service, as the investment is then too great to be sacrificed, and so, unwittingly, the transportation company is made a full partner in the profits, without liability for losses. The manufacturers locating in Wilmington avoid all this danger. If railroad freights are too high, he can use the water; and if one vessel will not make the right rate, another may; at any rate his independence is secured, and he is master of the situation rather than the corporation or individual whose business it is to carry his freights. Already we have three powerful competitors for our coal trade, and the prospect of the addition, soon, of a fourth. It is this vigorous competition that affords to the manufacturer such a decided advantage, and this we claim to have to a very great degree. Wilmington has not been, and never can be, captured and held by any one of the great railroad giants that are now struggling for the mastery. This will always be contested ground, and the advantages arising therefrom must accrue to the manufacturer in low freights, and to the consumers of coal and iron, in low prices. This single advantage alone should decide the point in our favor, but when we add to that, the presence of a large population skilled in every branch of the mechanical arts, a cheap and economical city in which to live, a climate unexcelled, and social and educational advantages of the best kind, what more need we say?

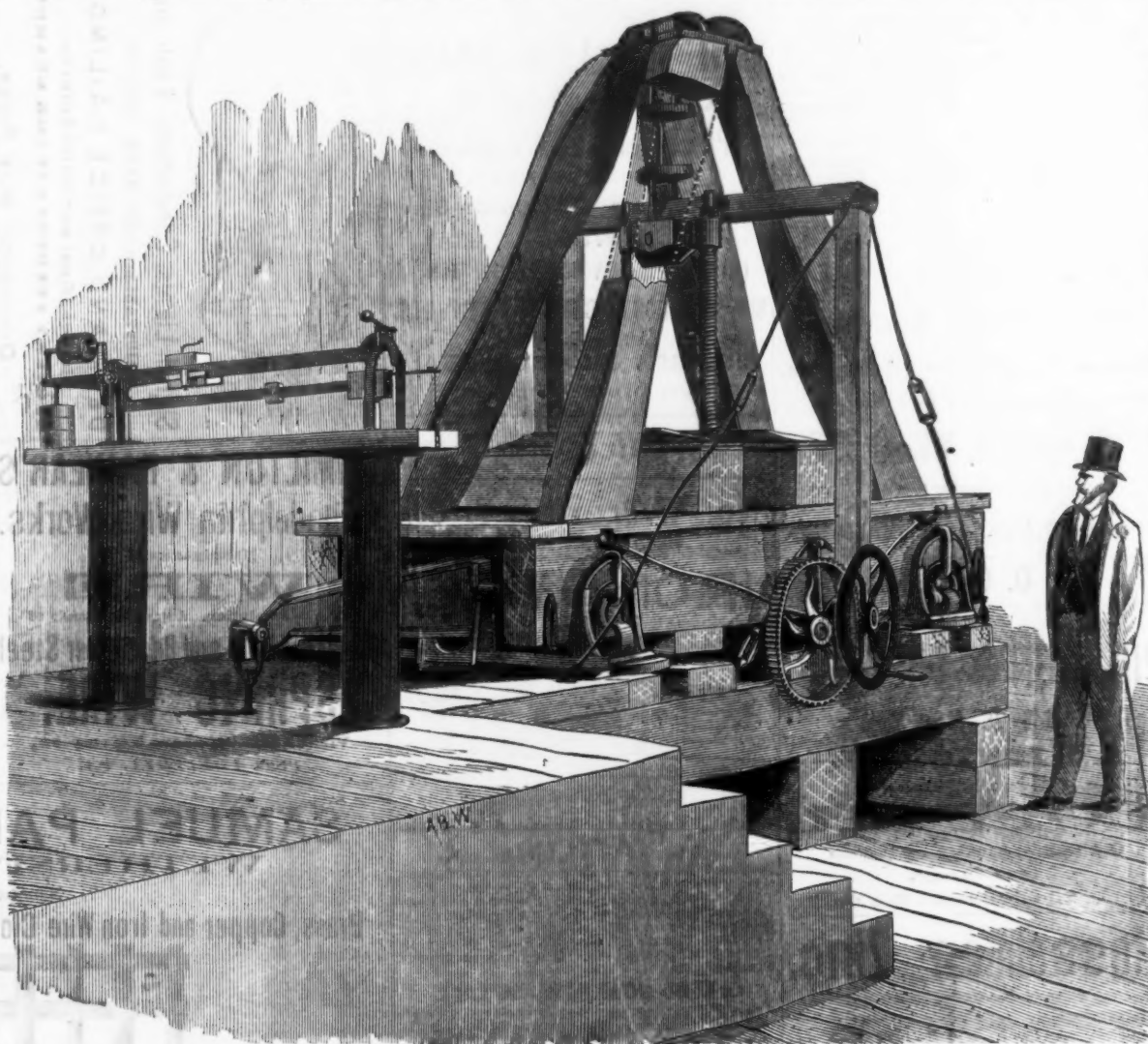
To the manufacturer of iron, then, we can and do offer advantages of the first importance, and when this monetary difficulty passes away, and the capital that has sought high rates of interest in railroad bonds finds its way back into the channels of legitimate business, we trust more companies will be started for the manufacture and working of iron, and that Wilmington will, ere long, take the rank that she should among the iron working cities of the country. Every mill started here for the manufacture of iron, helps to bring a consumer to use it. The condition of the iron interest in the country generally can hardly be told during the excitement just now prevailing, but no observing man can fail to see in the depressed state of the trade in Europe, that our opportunity is not far away, and that unless we make some great blunder, or overreach in some way, the iron trade must soon be one of the greatest sources of our national wealth, and the most prominent of our industries.

The Patent Office at Washington.

A writer in *Lippincott's Magazine* thus idealizes the National toy shop at Washington:

The Pompeian hall has something of the air of a hall dressed for legendariness, and if you pause to think you will note a strange wizardry at work there. You linger before a little printing press, and as the magical clouds rise and shut out the work day world, the skies of Greece are overhead, and the Ancient, searching for his lever with which to move the world, passes down the room and lingers with you; for surely he has found the lever, and surely the world has been moved with it, the boundaries of empires broken up, kings disrowned, republics ruined. Go farther; a case of toys, harmless trifles enough, arrests you—cannot a finger long, batteries the size of a lady's spool stand, but the reduced models of death-dealing engines whose power of wholesale slaughter may one day revolutionize the codes of nations and abolish warfare; in another case you observe only a lump of coal, a phial of pitch, a flask of oil; and the necromancer of the place has dipped his rod down into the central darkness of the earth and drawn up light like the day's. Yet beyond, an iron stirrup and a slender spur, and the sewing girl has but to set her foot there and escape the shapes that dog her. Not far away, again, we remember the Oriental magician, who as often as the king cut off his head grew another in its place, as we see the machinery for a feat almost as wonderful in the exact anatomy of steel springs and leather ligaments made to fit upon the very nerves of volition themselves, till the halt walk and the maimed are made whole. In this spot is the jar into which the fisherman shut the aprite; in that are the great geni who gather in a harvest; and in still another there lies a tiny thing answering your touch with no louder noise than a buzz and a click, but its whisper can be heard from end to end of the land, and it runs beneath the roar of ocean to carry the voice of one world to another. In fact, within these crystal cells the intelligence of all our millions is concentered; and it is no wonder that, in the face of the marvels here, inventors are sometimes seized with a temporary madness, and have to be cared for till the fit passes.

New and extensive Bessemer steel works are being erected in East Cleveland, Ohio.



FAIRBANK'S PATENT TESTING SCALE AT THE AMERICAN INSTITUTE FAIR.—Fig. 1.

put our producers on an equal footing with those of Great Britain. What will then happen is not a matter of doubt, as, at the same price, ship owners will undoubtedly prefer the superior iron of America in their ships. Our

dern improvements in labor saving machinery will, with materials at the same price, give our builders a decided advantage, immediately. It is generally believed by our ship builders that the business needs no special legislation for its protection or advancement, although such legislation seems to be desired very earnestly by the proprietors of new yards, and builders in other places, who have not the advantages which experience alone can give. Whatever legislation will help to produce materials at low prices, and, above all, has the most valuable feature of permanency, is most to be desired. The experience for the past few years has demonstrated the improbability of securing any valuable assistance from legislation, and, in our judgment, the frequent change of the laws effecting these interests is more to be feared than desired, as it causes a constant feeling of insecurity, which prevents pushing the business with the vigor that is necessary to its success.

CARS AND CAR WHEELS.

What was said in the opening sentences of this report about the present condition of business in the country generally, applies with especial force to this important branch of our industry. This is not the time to judge of its progress, as it, of all others, is the sufferer by the recent panic in railway securities. No one, however, believes that this depression can last long. To believe that a business so directly connected with our national progress should long languish, would be to doubt the future growth and prosperity of our country. The great West is rapidly increasing in population

this cheaper and better than it can be done by the public corporations that own these roads, and, therefore, those having the greatest facilities and experience will always have enough to do to supply the demand, except when interfered with by these unnecessary panics, which, by a reckless disregard of known laws governing commercial transactions, are so often precipitated upon us by the business gamblers, who

Rock's," for the manufacture of sheet iron and the rolling mills of the Christiana Iron Company, soon to be in operation for the production of plate iron. The selection of our city as the place to build these works by these manufacturers of large experience here and elsewhere, affords evidence of the strongest kind possible, that our claims to superior advantages for the production of iron, are well founded.

We repeat what cannot be too often stated, that Wilmington has the following advantages as an iron manufacturing point:

First—location—on tide water at the nearest point inland, where uniformly good harbors are afforded to the rich mineral deposits of Pennsylvania, with twelve miles of wharf fronts within the city limits.

Second.—Transportation facilities. A system of land and water transportation unexcelled on the Atlantic coast, with competing lines running in every possible direction. This system is now complete, and the various ores or kinds of iron used in manufacturing, whether on tide water or railroad, can as readily be centered here as at any other point in the country. We call especial attention to the word "competing," in the foregoing sentence, as the fact announced by that word is equal in importance to the announcement that any facilities at all exist. The experience and observation of many manufacturers have taught them that any enterprise, great or small, that puts itself in the power of any one transportation company, consents to its own injury, if not destruction. Monopolies are rarely liberal, and the possession of power is generally used to the advantage of the possessor, without due regard to the rights of others. Many firms and companies that have been induced by valuable gifts of land, and a contract for freights

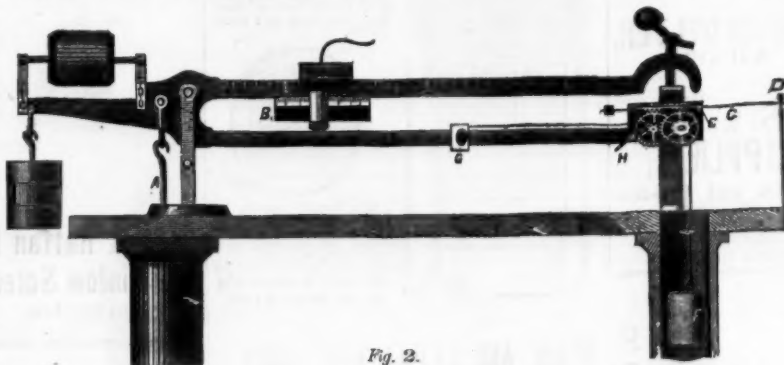


Fig. 2.

infest our great centres of finance and exchange, and spread distrust and destruction to the uttermost parts of the country. Fortunately, our car-building firms are too strong to be compelled to yield under this great depression, and the losses they sustain are not at all serious. This is indeed gratifying, and speaks well for their wise business foresight and judgment. Surely every one interested in the prosperity of our city, and especially in the welfare of our skilled workmen, will be anxious to see the orders for cars coming in once more as they did before this panic.

The manufacture of car wheels is still carried on with increasing vigor and energy, the company engaged in their production having increased and improved its facilities for producing first-class work.

IRON.

As has been before stated in the reports of this Board, this business is, perhaps, more important to Wilmington than any other, and it is

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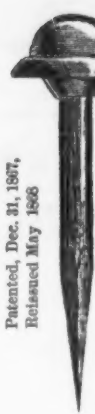
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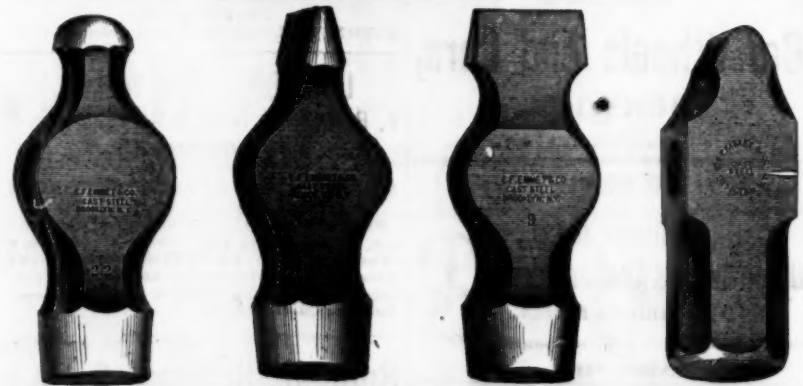
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October 15, 1873.

Awards at the Cincinnati Exposition.

From the official list of awards of premiums at the Cincinnati Industrial Exposition we select the following of interest to our readers:

Steam Engines, Boilers, Steam Pumps, Steam Hammers, and all apparatus operated directly by Steam.—Automatic cut-off stationary steam engine (this premium is given to promote the introduction of a class of steam engines calculated to reduce the consumption of fuel), gold medal, Wm. A. Harris; best safety steam boiler, silver medal, Crane, Breed & Co.; vertical boiler and engine combined, bronze medal, Whitmore & Brown; reversible steam engine for hoisting purposes, etc., bronze medal, H. J. Ready & Co.; Steam pump, direct action, silver medal, Cope & Maxwell Manufacturing Co.; Hamilton; steam pump, with crank and fly-wheel, bronze medal, J. H. McGowan & Co.; independent boiler feeder, bronze medal, Barney & Smith Manufacturing Co.; portable boiler, silver medal, Robinson Machine Works; portable farm engine, bronze medal, Robinson Machine Works; slide valve stationary engine, silver medal, Lane & Bodley.

Steam Boiler and Engine Fittings, &c.—Best low water indicator for steam boilers, silver medal, Hiram Kimball; best steam gauge, silver medal, Post & Co.; best safety valve for steam boilers, bronze medal, Aston Lock Safety Valve Company; best steam engine governor, silver medal, Gardener & Robertson; best combined heater and lime extractor for steam boilers, silver medal, Armstrong Heater Manufacturing Company; best Tallow lubricator for steam cylinders, bronze medal, F. Lunkenheimer; best piston packing, bronze medal, Wm. A. Harris; best grate bars for furnaces, bronze medal, L. B. Tupper.

Turbine Water-Wheels and other Hydraulic Machinery.—Best double acting lift and force pump for general purposes, silver medal, John H. McGowan & Co.; best cistern pump, bronze medal, John H. McGowan & Co.; best pump for general purposes, silver medal, John H. McGowan & Co.

Machinists' Tools and General Metal Working Machinery.—Best railroad car wheel and axle machinery, gold medal, Gaff, Gray & Gordon; best engine lathe, silver medal, Gaff, Gray & Gordon; best planing machine, bronze medal, Post & Co.; best upright drilling machine, bronze medal, Pratt & Whitney Co.; best radial drilling machine, silver medal, Gaff, Gray & Gordon; best shaping machine, silver medal, Gaff, Gray & Gordon; best bolt and screw cutter, silver medal, Stockwell, Griffin & Co.; best power shearing and punching machinery, silver medal, Long & Alstatter; best stove pipe elbow machine, silver medal, Resor Elbow Co.; best boiler flue expander, bronze medal, Post & Co.; best assortment of tinners' tools, silver medal, Charles Brombacher; best nail machine, silver medal, W. G. Robinson; best pipe screw cutting machine, silver medal, Stockwell, Griffin & Co.; best vises, silver medal, Stevens Patent Vise Company; best heading machine, silver medal, Plumb, Burdick & Barnard.

Wood-working Machinery.—Best band-saw for scroll work, silver medal, J. A. Fay & Co.; best reciprocating saw for scroll work, bronze medal, J. A. Fay & Co.; best variable stroke mortiser, silver medal, Lane & Bodley; best hubmortising machine, bronze medal, Lane & Bodley; best lathe for irregular forms, silver medal, Lane & Bodley; best carving and frizing machine, silver medal, Battle Creek Machinery Company; best general wood-working machine, silver medal, Bentall Margedant & Co.; best molding machine (straight), silver medal, S. A. Woods Machine Co.; best dovetailing machine, silver medal, Battle Creek Machinery Co.; best flooring machine, bronze medal, J. A. Fay & Co.; best machine for dressing timber, silver medal, S. A. Woods Machine Co.; best sand papering machine, bronze medal, A. T. Nichols & Co.

Pressure Blowers, Power Fans, Bellows, Air Pumps, &c.—Best portable forge, silver medal, Schwill & Dubruel.

Hoisting Machinery.—Best hydraulic hoisting machine, silver medal, Lane & Bodley; steam power hoisting machine, silver medal, H. J. Ready & Co.; hand hoisting machinery, bronze medal, National Derrick Co.

Unclassified Machinery and Appliances.—Best carbonic acid gas fire engine, silver medal, Babcock Manufacturing Company; best portable fire extinguisher, silver medal, Findlay Latta; best emery wheel machinery, bronze medal, Union Stone Co.; best pulley blocks, bronze medal, J. F. Hareourt; best power meat chopping machine, bronze medal, Murray Iron Works; best hand chopping machine, bronze medal, Murray Iron Works.

Mowers, Reapers, Threshers, Seed Drills and Attachments.—Best lawn mower, silver medal, Graham, Emlen & Pasmore; best grain drill, silver medal, P. P. Mast & Co.; best assortment of reaper and mower knives, bronze medal, Akron Knife Co.; best grain drill, with guano attachment, silver medal, Thomas Ludlow & Rogers; thresher and separator, P. P. Mast & Co.

Miscellaneous Agricultural Implements.—Best walking cultivator, silver medal, Deere & Co.; riding cultivator, silver medal, Furst & Bradley Manufacturing Company; sulky hay rake, silver medal, H. Myers & Bro.; hay tedder, silver medal, Ames' Plow Company; corn planter, bronze medal, Springfield Manufacturing Company; clover huller, silver medal, Ashland Machine Company; potato digger, silver medal, Major Geo. W. Rue; harrow, silver medal, Furst & Bradley Manufacturing Company; power corn sheller, silver medal, J. Wilder & Co.; hand corn sheller, silver medal, J. Wilder & Co.; portable hay press, silver medal, J. Wilder & Co.; hay and straw cutter, silver medal, J. Wilder & Co.; churn, silver medal, H. A. Hinchere; horse hay fork, silver medal, A. J. Nellis & Co.; assortment of plows, silver

medal, J. Wilder & Co.; two-horse plow, bronze medal, Horey & Co.; horse power, silver medal, Robinson Machine Works.

Ores and Metals.—Best display iron ores, silver medal, Traber & Aubrey; silver ores, silver medal, F. Speth; pig iron, silver medal, Traber & Aubrey; coals, silver medal, J. M. Kearney & Co.

Iron, Steel, &c.—Best cast steel, Miller, Barr & Parkin, silver medal; best boiler iron, Burgess Steel and Iron Works, gold medal; best merchant bar iron, Gaylord Rolling Mill Company, silver medal; best hoop iron, J. F. Hazen, agent, silver medal; best assorted sheet iron, McCullough Iron Company, silver medal; best assortment of wire, Cleveland Rolling Mill Company, silver medal; best cut nails, W. G. Robinson, bronze medal; best wrought spikes, Gaylord Rolling Mill Company, bronze medal; best horse shoes (hand made), Wm. Russell & Co., bronze medal; best iron wire, Globe Rolling Mill Company, silver medal; best plow steel, Cincinnati Steel Works, silver medal.

Saws, Scales and Bells.—Premium 238, counter scales, Brandon Manufacturing Company, silver medal; premium 239, platform scales, Brandon Manufacturing Company, silver medal; premium 241, assortment of bells, Vandusen & Tift, bronze medal.

Castings Iron, Work, &c.—Best assortment of common iron castings, bronze medal, Brown, Knecht & Kempf; best assortment of malleable iron castings, bronze medal, Moline Malleable Iron Works; ornamental castings, silver medal, Brown, Knecht & Kempf.

Railroad Supplies.—Best general display, gold medal, Post & Co.; locomotive head light, silver medal, Post & Co.; spun work for domes, cylinder heads, &c., bronze medal, Post & Co.; frog, silver medal, D. C. Pearce; lamps for passenger cars, silver medal, Post & Co.; car springs, silver medal, Union Car Spring Manufacturing Company; freight car and switch padlocks, bronze medal, Post & Co.; door locks and latches for railroad cars, bronze medal, Post & Co.

Cooking and Heating Stoves, Ranges, Furnaces, Steam Heaters and Ventilators.—By request, no premiums are offered on stoves. Best stationary cooking range, silver medal, Barstow Stove Company; portable range, silver medal, Wm. Miller; range furniture, bronze medal, Fares & Fischer; stove furniture, bronze medal, Fares & Fischer; hot air furnace, silver medal, Crane, Breed & Co.; steam heating apparatus, silver medal, Crane, Breed & Co.

Building and General Hardware.—Best assortment of door locks, silver medal, B. McGregor & Co.; wrought hinges, bronze medal, Wm. McKimney & Co.; wrought screws and bolts, bronze medal, L. M. Dayton; cabinet hardware, bronze medal, J. L. Wayne & Son; display of bronze hardware, silver medal, J. L. Wayne & Son; display of general hardware, silver medal, J. L. Wayne & Son; assortment of fire arms and hunting apparatus, silver medal, B. Kirtledge & Co.; door plate engraving, bronze medal, J. R. Kinsey & Co.; fine metal screws, C. E. Roberts & Co.

Edge Tools and Cutlery.—Best assortment of table cutlery, gold medal, Landers, Fray & Clark; display of general cutlery, silver medal, J. L. Wayne & Son; assortment of edge tools, silver medal, J. L. Wayne & Son.

Undertakers' Goods.—Metallic burial caskets, silver medal, American Burial Case Co.; assortment of undertakers' hardware, silver medal, J. L. Wayne & Son.

Plumbers' Goods, &c.—Best assortment of plumbers' brass work, silver medal, Thos. Gibson & Co.; plumbers' supplies, silver medal, W. & J. B. Gibson; machinists' brass work, silver medal, J. H. McGowan & Co.; brass castings, silver medal, F. Lunkenheimer; plumbing work, silver medal, Thos. Gibson & Co.; lead pipe and sheet lead, silver medal, W. & J. B. Gibson.

Tin, Galvanized Iron, Sheet Iron, Sheet Brass and Copper Work.—Best copper work, bronze medal, Lallance & Grosjean Manufacturing Company; tin work, bronze medal, Iron-clad Can Company; zinc ornaments, National Zinc Ornament Company.

Fire and Burglar Proof Safes, Bank and Safe Locks.—Best fire and burglar proof safe, gold medal, Hall Lock and Safe Company; best fire proof safe, silver medal, Hall Lock and Safe Company; best burglar proof safe, silver medal, Hall Lock and Safe Company; best bank or safe lock, silver medal, Hall Lock and Safe Company.

Refrigerators, Water Coolers, Freezers, Filters, and Miscellaneous House-furnishing Goods.—Best refrigerator and water cooler combined, silver medal, Joseph W. Wayne; refrigerator, silver medal, Lorenzo Bender; water cooler, bronze medal, Cincinnati Tin and Japan Manufacturing Company; filter, bronze medal, D. W. Jamison; Japanned ware, silver medal, Cincinnati Tin and Japan Manufacturing Company; retinned stamped ware, silver medal, Lallance & Grosjean; planished tin ware, silver medal, Lallance & Grosjean; ice cream freezer, bronze medal, Charles Gooch; display of house-furnishing goods, silver medal, Sellow & Co.; enameled iron ware, silver medal, Hartji, Wiley & Co.; coffee-making apparatus, silver medal, John Van; improvement in cooking utensils, bronze medal, Eureka Co-operative Foundry Association.

Work Stopped on the East River Bridge.—Work on the East River Bridge has virtually ceased for the winter, although carpenters are busy completing the scaffolding and hoistways upon the Brooklyn tower. The progress made upon the various sections of the work during the past season has not only been very satisfactory to the engineers and commissioners connected therewith, but has far exceeded their most sanguine expectations. The Brooklyn anchorage is now 97 feet above tide water. Beside the excavation necessary to begin the work, there have been laid upon this

one section alone during the past summer 8384 cubic yards of masonry. The New York tower has reached the height of 128 feet above tide water—eight feet above the roadway. Over 10,000 cubic yards of masonry have been laid during the season upon this section. Work will be resumed on the towers about the middle of next March. The engineer, Mr. C. C. Martin, says that it will take over half of next season to complete the Brooklyn tower, it not being yet within 51 feet of the required height. It will be impossible to complete the New York tower under two years' time.

English Investments at Chattanooga.

—The Chattanooga (Tenn.) Commercial says: Mr. James M. Burnup, of London, England, who some months since contracted by cable for a large body of valuable iron and coal land at Smith's X Roads, the property of Col. W. A. Hoskins, of this city, arrived here on last Monday, and completed the sale by making the first payment. Mr. Burnup, in company with Mr. Hoskins, left yesterday for Rhea county, for the purpose of acknowledging and having recorded the necessary papers. We are credibly informed the intention is to improve the property very soon by the erection of blast furnaces. The investment in itself is a very important one, and with us a splendid one at this time, but in the vast iron territory around us it is but a speck. Mr. Burnup bids fair to become of as great value to our section of country by presenting its attraction to Europe, as Gen. Wilder has proved himself to be in introducing our resources to the people of the United States. In addition to proving his faith by his works, by investing a large amount of money in iron land contiguous to Chattanooga, he had prepared and circulated in England a map showing the mineral resources of Lower East Tennessee. He has also discussed the iron interests of this county in the columns of the London Times in a manner calculated to awaken the liveliest interest in our immediate section on the part of English capitalists and ironmasters.

The Next Trade Union Congress.

—The official programme of the "Trade Union Congress," to be held in Sheffield in January, has been issued. The following is a copy: 1. Appointment of the Credential Committee, examination of credentials, and the report thereon to the Congress. 2. Election of officers to the Congress, and the president's opening address. 3. Legislative action: Report of the Parliamentary Committee. 4. Future legislation: Criminal Law Amendment Act, Conspiracy, Master and Servants Act, Factory Nine Hours Bill, Truck Bill, Compensation to Workmen's Bill and the Trades Union Act. Questions for discussion: 5. Representation of labor in Parliament—the best means to secure it. 6. The urgent necessity for providing a sufficient staff of efficient and practical inspectors to enforce the Factory and Workshops Regulation Acts and the Mines Regulation Acts; and the advisability of securing a number of qualified workmen to act as inspectors. 7. Trade unions—the federative principle as applicable to them. 8. Over-time, apprenticeships and piecework. Co-operation and industrial partnerships. 9. Emigration and unemployed labor; the employment of women and children in agriculture, factories and workshops; and the employment of soldiers in industrial trades and in agriculture; convict labor. 10. Trades halls, their adaptability and advisability for the purpose of trades societies. 11. The application of the Arbitration Act.

On the 23d of October, Woolwich, England, experienced a sudden and almost unexampled visitation of darkness. The morning had been wet and gloomy throughout, but at 1 p. m. the sky was overcast with a dark pall, which seemed to obscure every vestige of light from above. The darkness was not that of a London fog, for vistas of lighted windows could be seen for a long distance. It was rather the darkness of midnight, but there was a reddish tint in the sky like that occasioned by a great fire. The atmosphere was very heavy and oppressive. The rain had ceased, and the wind, which had been blowing from the southeast, entirely abated. The effect was dismal in the extreme. Nervous people encouraged the most dread forebodings; more reasonable ones attributed the darkness to an eclipse of the sun, but found no confirmation in the almanac. Fowls went to roost, pigeons and other birds stopped their flight to seek the nearest shelter, and every living thing seemed impressed by the scene. The period of intense gloom lasted about five minutes, when light gradually broke in from the west, and in an hour afterward there was brilliant sunshine.

The Commerce of Philadelphia.

—The annexed statement shows the number of foreign and coastwise vessels that arrived at the port of Philadelphia during November, as compared with the same period in 1872:

	1873.			1872.		
	For.	Coast.	Total.	For.	Coast.	Total.
Steamships.....	4	75	79	1	66	67
Ships.....	5	5	10	5	1	6
Barks.....	30	30	60	31	1	32
Brigs.....	14	12	26	15	6	21
Schooners.....	17	611	628	6	563	569
Steamers.....	100	100	200	256	256	256
Steamships.....	128	128	256	177	177	177
Total.....	70	926	996	58	1373	1430

The Hoosac Tunnel.

—The following is the engineer's statement of the meeting of headings of the Hoosac tunnel:

ENGINEER'S OFFICE, HOOSAC TUNNEL,
NORTH ADAMS, Dec. 1, 1873.
At the junction, west of central shaft, made Nov. 27, by blast, at 3-05 p. m., my lines varied by nine-sixteenths of an inch, and levels by one and one-half inches.

BENJ. D. FROST, Chief Engineer.

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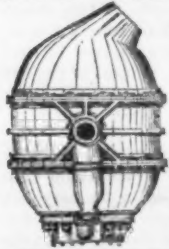
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New Patents.

We take from the records of the patent office at Washington the following specifications of certain patents lately issued, which will be found interesting:

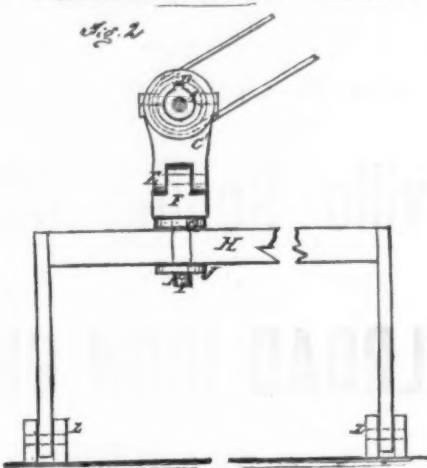
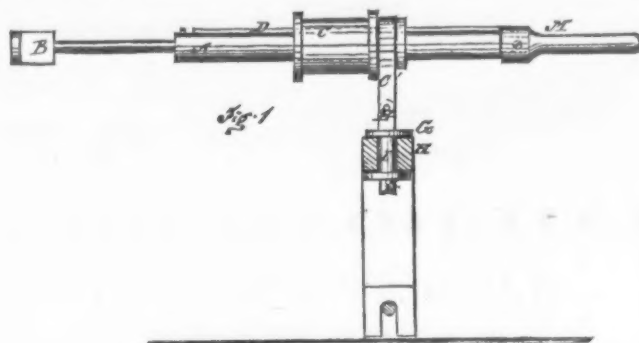
IMPROVEMENT IN APPARATUS FOR PUDDLING IRON.

Specification forming part of Letters Patent No. 143,811, dated October 21, 1873, issued to Joseph Davies, of Knoxville, Tennessee.

Figure 1 is a side elevation of an improved puddling tool, and a section of the bench on which it is mounted. Fig. 2 is a section of the tool on the line x x of Fig. 1, and a side elevation of the bench.

Similar letters of reference indicate corresponding parts.

A represents the rod or shaft of the puddling tool B, on which is a pulley, C, for revolving it.



IMPROVED PUDDLING APPARATUS.

The pulley is fitted by a journal at one end in a bearing in a standard, C, and the shaft is fitted in the pulley so as to slide freely endwise, and has a long key or spline, D, working in a groove in the pulley, to be revolved at the same time. The standard is jointed at E to a section, F, which is seated by a collar, G, on the bench H, and has a cylindrical extension, I, passing down through a long slot in the bench top, also through a loose washer or collar, J, which is secured by a pin, K. The bench ranges parallel with the front of the furnace, and is pivoted just above the ground at L, so as to swing toward and from the furnace. The handle portion, M, of the puddling tool rod or shaft is jointed to the other portion, so as not to revolve with it when held by the attendant for directing the tool.

It will be seen that the tool can be moved in and out by sliding in the pulley in which it is supported; also, by swinging the bench forward and backward on the pivots L, that it can be swung horizontally on the bench by turning the section F of the support, and that it can be shifted along the bench parallel with the furnace, and thus all necessary movements can be made to work the tool in all parts of the furnace to manipulate the iron for puddling and balling.

The principal object of the joint E is to keep the shaft or rod horizontal while swinging forward and backward on the pivots L.

Claim.—The puddling tool shaft D, pulley C, jointed revolving and sliding stand C F, and the slotted and jointed bench H, combined and arranged substantially as specified.

IMPROVEMENT IN THE MANUFACTURE OF IRON AND STEEL.

Specification forming part of Letters Patent No. 143,837, dated Oct. 14, 1873, issued to Edgar Peckham, of Antwerp, N. Y.

The object of my invention is to produce a thorough separation of the impure cinder from metal, and in this manner purify iron or steel.

In the ordinary way or method of conducting the operation, the dross or cinder arising from the ore or pig iron is usually allowed to collect and remain in the fire or furnace until the end of the operation; and, if the ore does not furnish cinder enough to work itself, hammer-cinder or some other substance is usually added to make sufficient cinder to cover the loop or metal; but the cinder is allowed to collect and remain in the fire or furnace until the end of the operation, and is drawn off either just before or just after the loop or ball is taken from the fire or furnace; consequently the loop or ball is impregnated with the impurities contained in the cinder.

This method consists in drawing off and removing from the fire or furnace the impure cinder arising from the ore or pig iron as fast, or nearly as fast, as it is made, and supplying its place (by the use of a flux) with a pure cinder; and, if the impure cinder arising from the ore or pig iron should be thick, and not liquid enough to separate thoroughly from the metal (as is often the case with cinder arising from ores or pig iron containing silica), add enough flux to it to make it liquid, so it will separate from the metal, then draw it off, and supply its place with a pure cinder by adding

more flux, and in this manner separate the impurities from the iron or steel. Use as a flux lime, flint, spar, or lean hematite or specular ore, or any other substance that will produce a liquid cinder free from impurities, the nature of the flux used depending somewhat upon the character of the ore or pig iron employed. Lean hematite or specular ore, when it can be obtained, is preferred.

If the ore or pig iron employed produces a thin liquid cinder, any substance that will produce a liquid cinder free from impurities—such as clay, lime, or lean hematite or specular ore—may be used; but if the ore or pig iron produces a thick gummy cinder that will not flow readily, some substance—such as lime, white sand, flint, spar, lean hematite or specular ore—must be used that will cut the thick cinder, and cause it to become liquid, so it can be drawn off.

After the flux has been melted the ore or pig iron should be charged into the furnace and worked in the usual manner; and as soon as the ore or pig iron is brought to nature and separated from the dross or cinder, and before being balled, the cinder in the furnace should be tapped and drawn off, and flux enough added or charged into the furnace immediately to replace the cinder thus drawn off (while this is being done, the furnace damper should be closed); after which the ore or metal should be balled and taken out. By adding flux to the impure cinder, so as to make it liquid and separate more thoroughly from the metal, and changing the cinder in this manner, the impure cinder arising from the ore or pig iron is removed, and the balls of iron or steel produced will be impregnated with the pure cinder from the flux instead, which will greatly improve their quality. This operation may be varied little by allowing a small stream of cinder to flow constantly, or nearly so, from the furnace during the operation, and charging into the furnace, from time to time, flux sufficient to replace the cinder thus drawn off and keep the requisite amount of cinder in the furnace. The furnace may be constructed with an upper hearth, in which the flux may be melted previous to drawing off the impure cinder from the ore or pig iron, and as soon as that is done the pure cinder from the flux may be allowed to run into the lower hearth and supply the place of the impure cinder drawn off; or a small stream of impure cinder may be kept flowing constantly from the lower hearth, and a correspondingly small stream be allowed to flow from the upper or flux hearth into the lower hearth, so as to keep the requisite amount of cinder in the furnace.

Claim.—1. The process of purifying iron and steel, during its manipulation in the catalan forge fire or puddling furnace, by using flux, substantially in the manner previously described.

2. The use of lean hematite or specular ore as a flux for purifying iron and steel during their manipulation in the catalan forge fire or puddling furnace, substantially as described.

The Prospects of the Lake Superior Ore Business.

The Marquette Mining Journal says: The movements of the ore companies are just now quite unsettled. The early part of the season promised so fine a year of prosperity that most of those who were in the lead entered enthusiastically, and in some cases extravagantly, into their work, feeling as though their energies and facilities were scarcely strong enough to enable them to carry out the contracts offered them. Everything continued prosperous and promising until soon after the financial troubles, which commenced in New York, they were stricken as with a thunder clap by the forfeiture of contracts and delay in the payment of drafts. There have been no failures or bankrupt cases, except that of the Cascade Company—which we have good reason to believe will soon be satisfactorily adjusted—but nearly all the companies have curtailed their labor force, some have suspended, and others are intending to suspend until times brighten up somewhat.

Concerning the prospects of the future, we do not see but one thing which is at all likely to interfere with the movement of ore after finances assume such a business stage as they must soon assume. Furnace men have tolerable stocks of iron on hand—from four to six months' supply, according to present demands—and this they are not willing to sell at the prices offered. Some of them will be forced to sell; still the holding of stocks will not pay those who are not forced to hold, as it does not now seem probable that a high rate can be obtained for some months to come. And this iron, which was made at unusual expense, by reason of fictitious prices for labor and material, will have to be marketed without a margin, unless furnacemen combine and stop the production until the article becomes scarce. But it is not likely that this will be done. The mills seem now to have partially recovered from the worst of the stagnation, and they will take most of this iron at just such prices, in small lots, as the nature of their business, for the time being, will justify them in paying.

Meanwhile the ore companies will be compelled to await developments as they transpire with mills and furnaces. So far as the Lake Superior miners are concerned, they not only have good stocks of ore on hand—nearly one-third of that which was mined with the expectation of realizing on it this season—but they are prepared to take out and put upon the market an unlimited supply, at a rate which will prove tolerably remunerative, and yet be able to compete with other localities. The financial panic has developed so far a much cheaper means of mining than has before been practiced. Labor and materials will be less expensive, whilst the expense involved in opening mines has, for the most part, been already paid. So that all the ore companies will be well prepared to meet a decline in prices, and the contingency cheerfully.

We hope, therefore, that the ore trade will not be compelled to succumb to the effects of the panic. The winter will be a hard one for the trade, but cure, prudence, and an anticipation of the facts as they seem now to be written for the future, will set all these things right before the opening of another season of navigation. In short, there seems to be the best of reasons for believing that the ore trade of next season will be as good, in the aggregate, as it has been this season. There will be sufficient increase in the shipments to compensate for all decline in prices.

Messrs. N. & G. Taylor & Co., of Philadelphia, have issued a circular congratulating the public in the great success of the New American Steam Ship Line, in which we find the following interesting item of information. "Steamers of increased capacity are now being built for our trade between Philadelphia and Europe; and there is every anticipation of four ore carriers being added by the American Steam Ship Company, to be built at our own docks, with our own labor and material."

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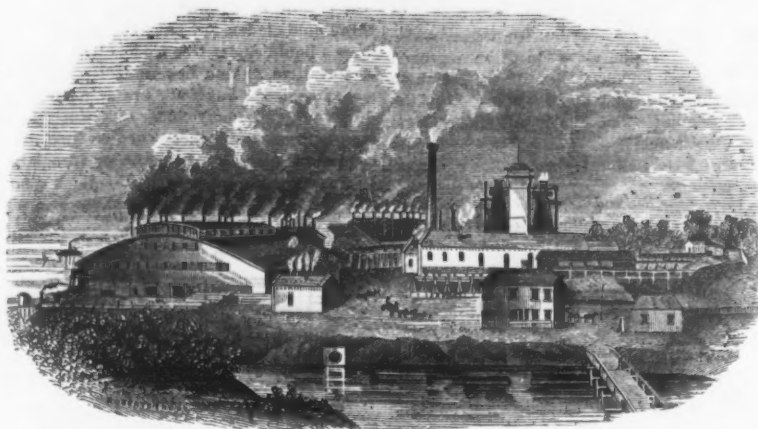
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Circulars on application.

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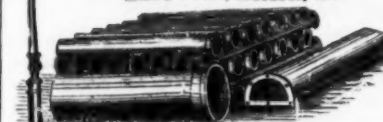
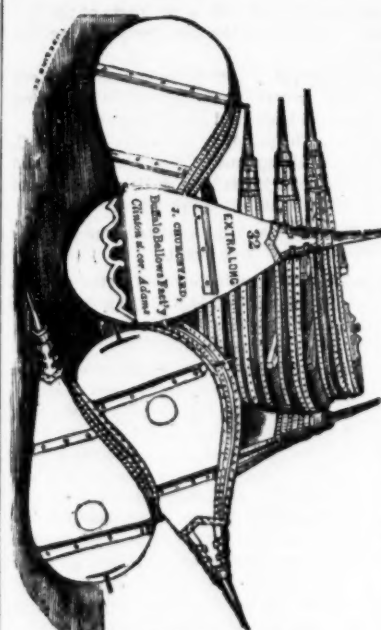
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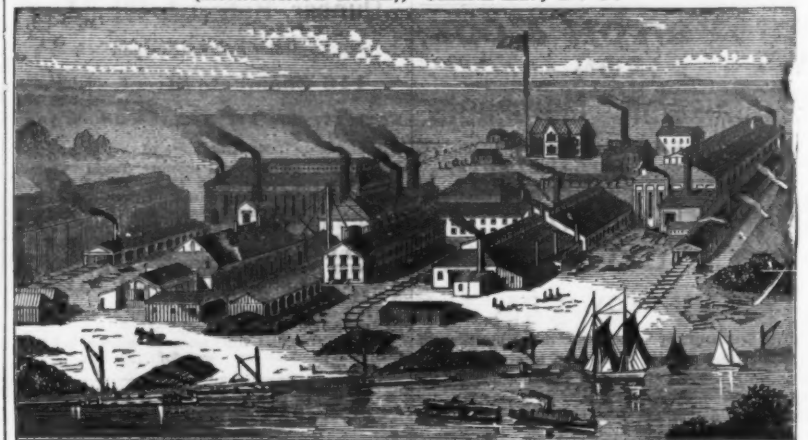
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**Foreign Mining and Metallurgy.**

The London Mining Journal presents the following interesting summary of the state of the mining and metallurgical industries of the Continent:

There are great hopes of a revival in the French iron trade, but at present the state of affairs is not very brilliant. Prices have not varied. There is still, of course, some demand for iron, but this demand has greatly declined. It is difficult to imagine how a temporary slackening of activity in industrial affairs could have involved the extinction of so many blast furnaces and the stopping of so many rolling mills. There have been a few small transactions in casting pig, but there has been scarcely anything passing in refining pig. Quotations range between £4. 8/ and £4. 12/ per ton in the Haute-Marne, and £4 and £4 8/ per ton in the Meurthe-et-Moselle, but prices do not appear to be very well established. Merchants' iron has been almost as much neglected as pig; quotations range between £10. 8/ and £11. 4/ per ton. At Paris first-class merchants' iron has been dealt in at £11. 12/ per ton. Rails and plates have occupied a more favorable position upon the French markets. This is especially the case with rails, thanks to some rather important contracts concluded at the commencement of the season. A contract for 300 tons of large plates has been concluded at £16 per ton, at the works. Machine iron has been well maintained. No. 20, coke made, has been dealt in between £12. 8/ and £13 per ton. In the basin of the Loire the iron market appears tolerably active. Upon the whole, there is not much alarm in the French iron trade; it is depressed undoubtedly at present, but confident hopes are entertained of a revival in affairs. The Liverdon Forges Company will pay, Jan. 15, a dividend for the first half of 1873, at the rate of 12/ per share. The Fives-Lille Company has announced a dividend for 1873-3, at the rate of £3. 8/ per share; of this dividend £1. 4/ per share was paid in coin Nov. 3, and 14/ per share will be distributed in coin May 1. The balance of £1. 10/ per share will be paid in obligations of the company, bearing interest from Jan. 1, 1874. The Bethune Mines Company will pay to-day (Saturday) a dividend of £1 per share.

There has been a notable slackening in the French coal trade; stocks are being formed at the pits' mouths, and in the warehouses of merchants. Coal owners also display a desire to sell, and are making, with that object, serious concessions in regard to prices. This is not what the coal trade had hoped for and expected. Some surprise is felt at this sudden check in affairs at a usually favorable season, and all the more alarm is felt since it is thought that the present situation rests on a weak foundation. In the basin of the Nord, and especially at Lille, coal is stated to have been offered by one mine at 2 1/2 pence per ton below the official quotation. Paris, which usually reflects tolerably well the state of affairs, exhibits now a rather serious depression in coal—at least among speculators. Stocks are stated to be accumulating, and deliveries are small, as well by railway as by water. It is not surprising, perhaps, that the market, which has been undecided for two months past, should still maintain its indecision; producers will, probably, make a final effort when they are seconded by the rigors of the season, but a reduction in rates is inevitable. In the basin of the Loire the demand is active, and prices are hardening, while stocks are almost nil. This condition of things is, however, restricted to the comparatively narrow limits of the Loire basin. The hope is gaining ground, taking France generally, that the price of coal is returning to a normal level in that country.

There does not appear to be any serious change in the aspect of the Belgian iron trade, and it is difficult to see how metallurgical industry can revive with a continuance of the causes which have brought it to its present condition. It is not sufficient that the falling price of coke leaves a little more latitude to the pig iron market. It is necessary that the conversion of pig into iron should be attended with some profit, and that iron should be restored to all its former ordinary applications by selling again at more moderate prices. It is necessary, also, that a fall in iron should coincide with a fall in coal, as there are few industries consuming one material which do not consume the other. Refining pig meets a slow sale, at £4 to £4. 8/ per ton; casting pig remains rather neglected, at £5. 12/ to £6 per ton. Merchants' iron maintains its price, but there is comparatively little business passing in it. Rails have been the subject of some transactions, and the special rolling mills do not much want work. The plate mills have also some orders, but they would not suffice to employ this branch of the national industry if a number of works were not reduced to a state of idleness. The importations of pig and iron into Belgium have increased to the extent of 25 per cent. during the first eight months of this year, having risen from 100,000 tons to 125,000 tons. The whole of the increase observable in this year's figures occurred in the imports from England. The imports of August presented a diminution, as compared with those of 1872. The expansion observable in the imports from Great Britain occurred in rough pig and rails. On the other hand, the exports of iron from Belgium declined from 192,000 tons in the first eight months of 1873 to 162,000 tons in the first eight months of 1872; the decline in the exports occurred especially to England and the Low Countries. In August, Belgium only exported 16,000 tons of iron of various descriptions, against 25,000 in August, 1872.

Coal quotations have not varied in Belgium, but the demand has become less active; such may be said to be the budget of the week. Stocks are beginning to accumulate, deliveries are less numerous, and railway rolling stock no longer makes default. The temporary dullness in the

trade is attributed to the uncertainty in political events in France and the continuance of comparatively fine weather. Supplies were also laid in with some activity during the summer and autumn, and this circumstance has of course had a tendency to increase the existing dullness. At Charleroi the coal trade is beginning to complain of a scarcity of orders; prices remain, however, apparently firm. At Mons industrial coal has been feeble; only coal for domestic purposes is purchased with any firmness; prices have remained without any variation. At Liege there has been the same state of affairs and the same tendency in business. Everywhere the coal trade presents, however, some heaviness. The imports of coal into Belgium amounted in the first eight months of this year to 404,000 tons, as compared with 126,000 tons in the corresponding period of 1872. August figured in the two totals for 57,000 tons and 15,000 tons, respectively. The increase in the imports has referred wholly to coal obtained from the Zollverein, 224,000 tons more Ruhr coal having been imported into Belgium in the first eight months of this year than in the corresponding period of 1872. The imports of English coal into Belgium increased to the extent of 38,000 tons in the first eight months of this year, and those of French coal increased to the extent of 1400 tons. The imports of coke into Belgium also increased in the first eight months of this year to 20,700 tons, as compared with 4500 tons in the corresponding period of 1872. The exports of coal from Belgium declined from 3,000,000 tons in the first eight months of 1872 to 2,800,000 tons in the first eight months of 1873. The exports of Belgian coal to the Low Countries also presented a falling off of 135,000 tons to August 31 this year. The exports of Belgian coal in August amounted to 345,000 tons, as compared with 401,000 tons in August, 1872. On the other hand, the exports of coke from Belgium have increased this year, having amounted to 585,000 tons to August 31, as compared with 510,000 tons in the corresponding period of 1872. These statistics seem to show that Belgium has largely suffered as regards its foreign coal connection from the excessively high prices which have prevailed for coal in Belgium.

New Safety Lamp for Mines.

An English exchange describes a new safety lamp for miners, invented and patented by Mr. Marcus Israel Landau, of Saint Mary Axe. The wick tube is surrounded by three concentric chambers, one-half of the outermost of these being used as the oil reservoir. The remaining half of the outer chamber is perforated to admit air to the wire gauze or perforated metal with which the second chamber is protected, and to render direct communication between the external atmosphere and the flame impossible, the perforated metal connecting the second with the inner chamber is placed on the opposite side of the lamp from that which connects the outermost and second chambers. Similarly careful provision is made for the escape of the products of combustion, the top of the lamp being formed of a spiral plate of metal of conical form, and the perforations being provided only at the innermost and outermost ends of the spiral, the heating of the outer perforations is prevented. There are several ingenious contrivances in connection with the locking and re-opening of the lamp which have been introduced with a view to prevent the exposure of the flame. Upon the axle carrying the wheel for elevating the wick there is placed a wheel which, upon the top of the lamp being unscrewed, is operated by a series of projections on the lamp top, and lowers the wick into the tube, thus extinguishing the flame. This axle is slightly movable longitudinally, and the locking screw, which is about 1/4 in. diameter, is so placed that in locking the lamp it forces the axle forward, and throwing a pinion thereon into gear with a wheel, permits of the wick being raised and lowered from the outside. It will, of course, be understood that whilst the locking screw is in position the lamp top cannot be unscrewed, and that when the screw is withdrawn, the movement of the wick cannot be effected from the outside, nor can the extinguishing of the flame by the action upon the turning wheel of the projections in the lamp top be prevented.

With regard to the general action of the lamp, it is explained in the specification that the mode in which the lower portion of the lamp is arranged is such that the flame only draws just sufficient air for combustion at the lower part of the lamp, and if there be a rush of inflammable gas or fire damp in force the flame would be extinguished. Moreover, it is continued, by this arrangement, the entry of air or gas from the outside at the upper part of the lamp is prevented, no air being drawn in at that part to feed the flame, and thus the danger of admission of deleterious gas is prevented; there are man-holes for cleaning the chimney.

The various arrangements included in the invention may, Mr. Landau considers, be applied to furnaces, fire places, and apparatus for heating, especially for maintaining heat and combustion, securing safety, and preventing the evolving of noxious or deleterious vapors. The arrangement may also be applied for ventilation. In the lamp experimented with by Mr. Landau, he demonstrated that the flame was instantly extinguished by the admission of gas through the perforations below the level of the flame, and that no effect whatever was produced by bringing the gas into contact with the lamp top; therefore explosion in a mine where such a lamp is used would be impossible.

Mr. S. C. Maine, of Boston, has invented an improved method of ear ventilation, which consists in the employment of a small com-

pound air-box, one part of which is outside and the other part on the inside of each window of the car, and is directly under the control of the passenger. The external portion of the box is furnished with a valve-door at each end, so that, whichever way the car may be moving, one of these valve-doors will be open and the other closed. The aperture is slightly enlarged so as to give free admission to the air, having the momentum given to it by the moving train. The air passes from the outside to the inside box, directed upward through a fine wire netting, intended to exclude not merely cinders but the finest dust from the flue of the locomotive. This compound air-box, so to call it, is the ventilator; and the entire process is simply that of introducing the external air into the car in a particular way; and deflecting the column of air at right angles upward immediately upon its entering the car. By thus deflecting the rising air, it impinges upon the top of the car, diffusing itself and moving at the same time the air from the floor to the monitor top, and thus changing the entire air of the car. This process is claimed by the inventor to be in effect the revival of the old open fire-place method of ventilation. Another object of this arrangement is to avoid incommencing the passengers, as opening of a window is likely to do; to exclude cinders and dust, and to change constantly the air of the car. It will be seen, from what we have said, that the invention is perfectly simple and the process equally so. Of course the ventilators, so called, in the monitor-top cars, are necessary to the working of the apparatus, and must be considered as a portion of the machinery, unless some other form of exhaust is adopted.

The Sutcliffe Gun.

On the afternoon of Monday, the 3d instant, the new Sutcliffe gun, weighing in its rough state 72,000 pounds, was successfully cast at the West Point Foundry, and being the most gigantic piece of ordnance ever cast here has created considerable interest.

At its last session, Congress made an appropriation for the purpose of assisting American inventors in their experiments on heavy artillery. Mr. Sutcliffe, whose name the gun bears, is one of the few gentlemen whose plans are being tested by the government. He is only interested in the steel mechanism which is to be attached to this "preacher that speaks to the purpose," as Miles Standish would call him.

The gun is made of the finest iron (standing a pull of 30,000 to 35,000 pounds), and brought here by Messrs. Paulding, Kemble & Co. for this express purpose. The casting is now 19 feet long, but when finished will be only 15. It will then have a steel barrel 4 inches thick at the breech and 3 at the muzzle, with rifle bore, and weigh 45,000 pounds. The ball will be 9 inches in diameter, and weigh about 250 pounds.

The mold was made a week ago, and at the time of casting was as hard as a sun dried brick. It was so situated that the iron from two large furnaces could be run directly into it by means of troughs. The core is a cast iron tube, wound with rope and covered with sand. This was filled with water the moment the metal was run in the mold. Twelve and a half minutes were occupied in casting, and the water, which was being forced through the core at the rate of 25 gallons per minute, was raised from 38 to 51 deg. The core will be kept full of water 12 hours, when the iron will be sufficiently set to allow its removal. The water will then be exhausted, and as soon as the rope burns from its outside, tacking will be attached and the core withdrawn. Then Rodman's celebrated process will be kept up for six days. The bore being always full of water, of course the contraction from the inside goes on more rapidly than from without, and the desired strength is thus obtained. The portion next the water is first contracted by cooling; the part next cooled, contracts, and binds the first, as it were, like a band on the inside. The next layer acts similarly, and so on till all is cooled, each part successively binding that within till all is held with great tenacity. Eight days will be required to cool this monster, and at a cost of about \$15,000.

American Steel.—A correspondent of the Chicago Times, who evidently believes in American steel, says: "In my travels throughout the country, I am repeatedly asked, why not make as good steel in this country as in England? I admit that such a question might have been pertinent ten or twelve years ago. The steel trade of this country was then in its infancy, inexperience had to battle against a country of a century's growth in the trade, and we may add that there has been improvement in English steel for more than a half a century, while in America the short space of fifteen years has raised her to a standard of success surpassed by none in the world. We assert, and that fearlessly, that America cannot at present be surpassed in her manufacture of steel. Why should she? Her artisans are as intelligent as any on the globe, quick to see and ready to act, in fact the personification of true business, while her process is the same as in England, and the stock used equally as good. To raise the country to an equal proficiency with Sheffield only requires the destruction of a needless and unwarranted prejudice, which is happily fast dwindling away. I have had twenty-five years' experience in the steel trade in Sheffield and in this country, and know whereof I speak, and I predict that ere long English steel will be unknown in American markets. Let us encourage, then, the industries and support the production of home, and thereby give our mechanics a fair chance in the great battle of life, and the result will be the envy of surrounding nations and the astonishment of a gazing world."

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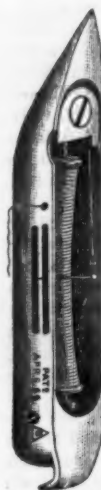
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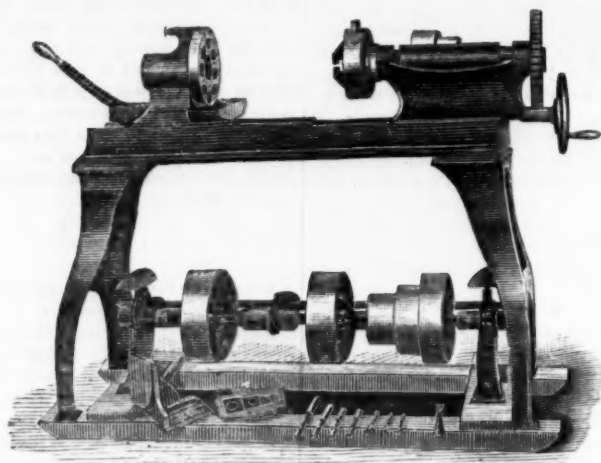
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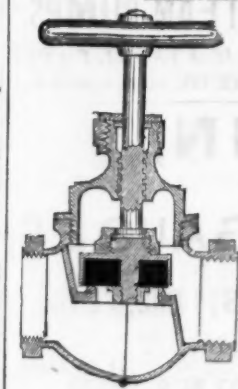
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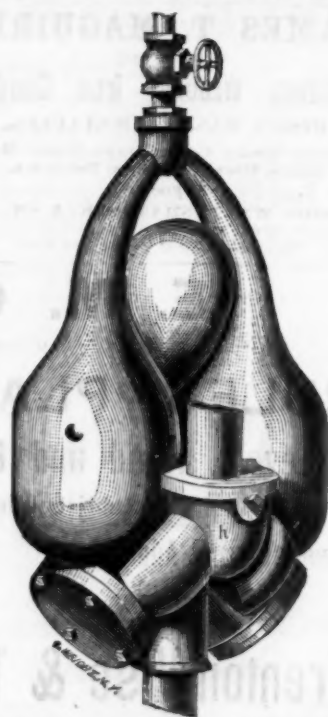
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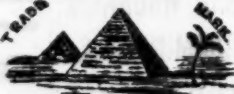
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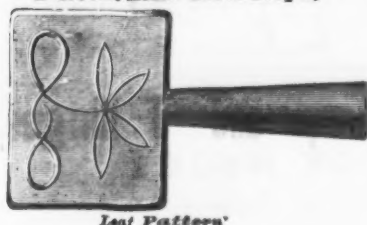
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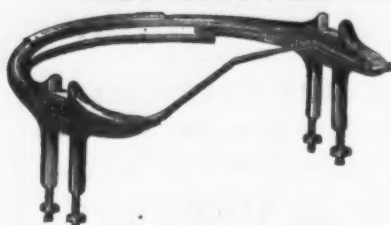
Leaf Pattern.

King Bolt Yokes.



Established 1850.

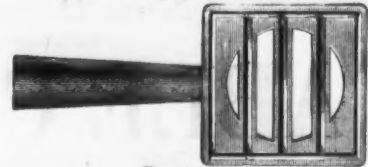
No. 6 Fifth Wheels.



1871 Pattern Shaft Couplings.



Patent Cross Bar Steps.

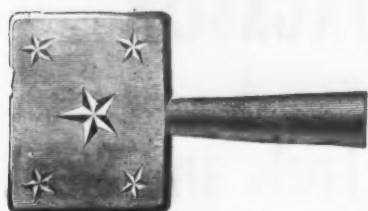
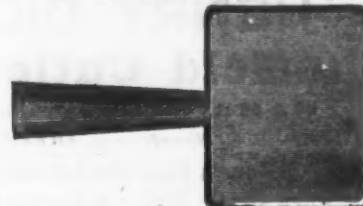


Upper View.



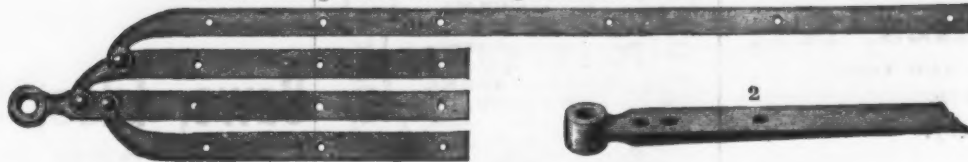
Lower View.

Solid Plain Pattern Steps.



Star Pattern.

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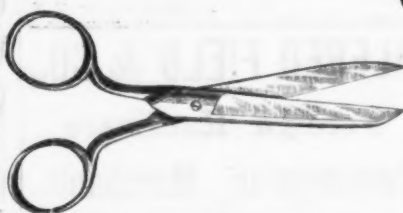


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Bit Bricks, Manufacturers of.	
Muller's Falls Mfg. Co., 75 Beekman, N. Y.	15
Boilers—Steam.	
Vernor Thos. 30th and Chestnut, Phila.	31
Bolt Headed Machines, Manufacturers of.	
Chapin Machine Co., New Hartford, Conn.	31
Plum, Burdett & Barnard, Buffalo, N. Y.	32
Bones, Manufacturers of.	
Ansania Bros. and Copper Co., 19 Cliff, N. Y.	2
Benedict & Burnham Mfg. Co., Waterbury, Conn.	2
Coe Bros. Mfg. Co., Waterbury, Conn.	2
Plum & Atwood Mfg. Co., 80 Chambers, N. Y.	2
Sevill Mfg. Co., 4 Beekman, N. Y.	2
Waterbury Bros. Co., 32 Beekman, N. Y.	2
Brick Presses, Makers of.	
Carnell Geo., 1819 Germantown Ave., Phila.	18
Carnell F. L. & R., 1819 Germantown Ave., Phila.	18
Bridge Builders.	
Moseley Iron Bridge and Roof Co., 5 Dey, N. Y.	4
Wilson John, Sheffield, England.	11
Butts and Hinges, Makers of.	
American Butt Co., Providence, R. I.	4
American Spiral Spring Butt Co., 21 Park Row, N. Y.	4
Atina Nut Co., 100 Mulberry, N. Y.	4
Crooke & Co., 100 Mulberry, N. Y.	4
Roy & Co., West Troy, N. Y.	4
Stanley Works, 32 Beekman, N. Y.	4
Union Mfg. Co., 55 Chambers, N. Y.	4
Cabinet Hardware, Manufacturers of.	
Landers, Frary & Clark, 248 Broadway, N. Y.	11
Carriage Bolts, Makers of.	
Skelly L., 24th and Callowhill, Phila.	12
Townsend, Wilson & Hubbard, Phila.	12
Carriage Hardware, Makers of.	
Smith B. D. & Co., Plainville, Ct.	12
Car Wheels, etc., Manufacturers of.	
Jackson & Woodin Co., Berwick, Pa.	4
Taylor Iron Works, High Bridge, N. J.	6
Chains, Makers of.	
Cain, Gordon & Co., 1819 Germantown Ave., Phila.	4
Kendrick & Bunkie, Trenton, N. J.	4
Wyatt Thos., 71 Eddy, Providence, R. I.	4
Chisels, Manufacturers of.	
Back Bros., Millbury, Mass.	14
Clothes Wringers, Manufacturers of.	
Moore S. H. & Co., 68 Lake, Chicago, Ill.	14
Providence Tool Co., 11 Warren, N. Y.	14
Coal, Miners of.	
Pardee A. & Co., 111 Broadway, N. Y.	6
Coal Trade, Manufacturers of.	
Eastbrook Wm., 311 Cherry, Phila.	32
Ohio Coal and Coke Co., 47 E. Front, Cincinnati, O.	19
Smith, Burns & Co., 47 E. Front, Cincinnati, O.	19
Coffee and Spice Mills.	
Lane Brothers, Millbrook, N. Y.	14
Enterprise Mfg. Co., Philadelphia, Pa.	26
Coffin Trimmings, Makers of.	
Wayne Hardware Co., Cincinnati, O.	14
Commission Merchants, English.	
Goddard Samuel A. & Co., Birmingham, Eng.	4
Compasses and Dividers, Manufacturers of.	
Bemis & Call Hardw., 200 Co., Springfield, Mass.	19
Cooper's Tools, etc., Dealers in.	
Little Chas. E., 30 Fulton, N. Y.	14
Corrugated Steel Pipe, Makers of.	
Corrugated Metal Co., East Berlin, Conn.	4
Sellew Elbow Co., 218 E. 1st, Chicago, Ill.	30
Cranckles, Manufacturers of.	
Newkumet Adam, 157 N. Front, Phila.	13
Rosa & Hotchkiss, 157 N. Front, Phila.	13
Taylor, Stow & Co., Phila.	25
Crane Combs, Manufacturers of.	
Kellogg W. F. & Co., Troy, N. Y.	30
Cutlery, Importers of.	
Baker Hermann & Co., 101 Duane, N. Y.	11
Dickinson Henry, 66 and 68 Reade, N. Y.	11
Fisher Jos. S., 411 Commerce, Phila.	11
Friedman & Lauterjung, 14 Warren, N. Y.	11
King H. & J. W., 30 Chambers, N. Y.	11
Peace Chas. Jr., 30 Chambers, N. Y.	11
Ward Asahel, 101 Duane, N. Y.	11
Wilson Hawkeye, 101 Duane, N. Y.	11
Smith & Hall, 60 and 62 Reade, N. Y.	11
Taylor Thos., 41 Chambers, N. Y.	11
Cutlery, Manufacturers of.	
American Knife Co., 101 Duane, N. Y.	11
Burkhardt Aaron, Pepperell, Mass.	11
Landers, Frary & Clark, 248 Broadway, N. Y.	11
Miller Bros. Cutlery Co., W. Meriden, Conn.	11
New York Knife Co., W. Meriden, Conn.	11
U. S. Steel Shear Co., W. Meriden, Conn.	11
Differential Pulley Blocks, Makers of.	
Van Wart & McCoy, 43 Chambers, N. Y.	11
Dag Collars.	
Mercer W. T. & J., 30 Duane, N. Y.	9
Door and Gate Springs.	
The Challenge Door Spring Co., 69 Ann, N. Y.	24
Palmer & Gray, 32 Elm, Cincinnati, O.	24
Van Wagner & Williams, 21 Park Row, N. Y.	24
Dredging, and Makers of Dredging Machines.	
Am. Dredging Co., 214 S. Delaware Ave., Phila.	31
Drill Chucks, Manufacturers of.	
Hull F. A. & Co., Danbury, Conn.	31
Drilling Machines, Makers of.	
Miller Falls Co., 75 Beekman, N. Y.	13
Thorne & Deffen, Philadelphia, Pa.	31
Dynamometers.	
Procter Thomas & Son, 13 Gold, N. Y.	13
Edge Tools, Makers of.	
Bradley G. W., 91 Chambers, N. Y.	7
Elevators, Makers of.	
Otis Bros. & Co., 38 Broadway, N. Y.	9
Emery.	
The Union Stone Co., 16 Exchange, Boston.	23
Emery Cloth.	
The Union Stone Co., 16 Exchange, Boston.	23
Emery Wheels, Makers of.	
Emery Company, Stroudsburg, Pa.	23
The Union Stone Co., 16 Exchange, Boston.	23
Engineers, Machinery, etc.	
Henshall James, 104 Beane, Phila.	31
James Moore, cor. 19th and Buttonwood, Phila.	31
Taws & Hartman, 123 N. Front, Phila.	31
Engines, Steam, Makers of.	
New York Steam Engine Co., 38 Chambers, N. Y.	31
Paulding, Kemble & Co., 30 Broadway, N. Y.	31
Whitehill, Smith & Hampson, Newburgh, N. Y.	31
Woodruff Iron Works, Hartford, Conn.	31
Engravers, Wood.	
Paterson Jas. S., 21 Spruce, N. Y.	6
Roberts Wm., 32 Beekman, N. Y.	6
Erletts.	
Union Eyelet Co., Providence, R. I.	3
Faucets, Self-Measuring, Makers of.	
Enterprise Mfg. Co., of Pa., Phila. and N. Y.	36
Filles, Importers of.	
Carl J. & Riley, 30 John, N. Y.	29
Dickinson Henry, 66 and 68 Reade, N. Y.	11
Fisher Joseph S., 411 Commerce, Phila.	11
Fraser Peter A. & Co., 30 Fulton, N. Y.	21
Moss F. W. John, N. Y.	21
Sanderson Bros. & Co., 10 Cliff, N. Y.	21
Speck & Jackson, 95 Chambers, N. Y.	13
Filles, Manufacturers of.	
Barnett G. & H., 41 and 43 Richmond, Phila.	21
McCauley & Bro., 123 and 124 N. 4th, Phila.	21
Nicholson Ellis Co., Providence, R. I.	21
Wheeler, Clemens & Co., Middletown, N. Y.	21
Fire Arms, Manufacturers of.	
Schwenker & Daly, 43 Chambers, N. Y.	36
Seckman Philip, 26 and 28 Broadway, N. Y.	36
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Hall A. & Sons, Perth Amboy, N. J.	18
Kreischer & Son, 58 Goerck, N. Y.	18
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Palmer, Newton & Co., Albany, N. Y.	18
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Cowlin Mfg. Co., 115 Chambers, N. Y.	11
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Galvanized Iron.	
Lefferts Marshall Jr., 94 Beekman, N. Y.	4
Glass, Importers of.	
Downing A. C. & Co., 57 Beekman, N. Y.	35
Governors.	
Shive Governor Co., Bethlehem, Pa.	27
Grindstones.	
McDermott J. & Co., Cleveland, O.	23
Shepard Sidney & Co., Buffalo, N. Y.	23
Wood Walter R., 330 and 332 Front, N. Y.	23
Gunpowder, Makers of.	
Kincaid F. L. (Dupont), 70 Wall, N. Y.	23
Lafin & Bond Powder Co., 21 Park Row, N. Y.	23
Hammers, etc., Manufacturers of.	
Emmet Hammer Co., Brooklyn, E. D., N. Y.	8
Hammond C. & Son, 13 N. 6th, Phila.	8
Milnot & Co., Oliver, Boston	8
Nelson Tool Works, 157 E. 3rd, N. Y.	10
Handles, Hoe, Rake, &c.	
Smith J. W. H. & Co., Charlotte, Mich.	10
Hardware, Brass and Galvanized.	
Piebout W. & J., 38 Pearl, N. Y.	2
Hardware, Commission Merchants.	
Fernald & Sise, 100 Chambers, N. Y.	21
Green R. M., 100 Chambers, N. Y.	21
Graham & Haines, 25 Chambers, N. Y.	21
Walbridge Geo. B., 35 Chambers, N. Y.	21
Hardware Dealers.	
Hart, Supplies & Wagon, 635 Market, Phila.	14
Louderback, Gilbert & Co., 35 Chambers, N. Y.	14
Shepard Sidney & Co., Buffalo, N. Y.	23
Turner, Seymour & Judds, 64 Duane, N. Y.	21
Hardware Importers.	
Beam & Murray, 54 Cliff, N. Y.	11
Baker Hermann & Co., 101 Duane, N. Y.	11
Field Alfred & Co., 47 John, N. Y.	11
Hilger & Sons, 37 Chambers, N. Y.	11
King H. & J. W., 30 Chambers, N. Y.	11
Louderback, Gilbert & Co., 35 Chambers, N. Y.	14
Van Wart & McCoy, 43 Chambers, N. Y.	11
Turner R. A., 37 Chambers, N. Y.	11
Hardware Manufacturers.	
Biddle Mfg. Co., 25 Chambers, N. Y.	24
Enterprise Mfg. Co., 32 Pearl, N. Y.	26
Hart, Blyden & Mead Mfg. Co., 32 Pearl, N. Y.	26
Kellogg Wm. F. & Co., Troy, N. Y.	30
Lane, Dale & Co., Troy, N. Y.	30
Louderback, Gilbert & Co., 35 Chambers, N. Y.	14
Many F. L. & Marshall, 47 Warren, N. Y.	11
Middletown Tool Co., 82 Chambers, N. Y.	12
Miller's Falls Mfg. Co., 75 Beekman, N. Y.	15
Pratt & Co., Buffalo, N. Y.	15
Providence Tool Co., 11 Warren, N. Y.	14
Russell & Erwin Mfg. Co., 45 Chambers, N. Y.	14
Schweitzer Mfg. Co., 47 Reade, N. Y.	21
Shattuck W. F. & Co., 113 Chambers, N. Y.	21
Stanley Works, 32 Beekman, N. Y.	11
Turner, Seymour & Judds, 64 Duane, N. Y.	21
Union Mfg. Co., 55 Chambers, N. Y.	4
Williams, White & Churchill, 75 Warren, N. Y.	21
Wilson Mfg. Co., 37 Chambers, N. Y.	29
Hardware Specialties.	
Biddle Mfg. Co., 25 Chambers, N. Y.	24
Haase John A., rear 115 Vanhorn, Phila.	12
Holton F. G. & Co., 134 Walnut, Cincinnati, O.	10
Louderback, Gilbert & Co., 35 Chambers, N. Y.	29
Sample, Birge & Co., 123 Broadway, N. Y.	6
Shepard Sidney & Co., Buffalo, N. Y.	29
Helve Hammers, Makers of.	
Bradley Mfg. Co., Syracuse, N. Y.	30
Hemp Piston Packing.	
Candell John & Co., 131 Fairmount Ave., Phila.	23
Holding Engines, Makers of.	
Otis Bros. & Co., 348 Broadway, N. Y.	9
Todd & Bafferty Machine Co., 10 Barclay, N. Y.	27
Horse Hay Forks and Fixtures, Makers of.	
Neils A. J. & Co., Pittsburgh, Pa.	32
Horse Nails, Makers of.	
Ansania Bros. and Copper Co., 19 Cliff, N. Y.	2
Constance & Co., Middletown, N. Y.	3
Globe Nail Co., Boston, Mass.	3
Pratt & Co., Buffalo, N. Y.	3
Putnam S. S. & Co., Neponset, Mass.	3
Horse Shoes, Makers of.	
Burden Iron Works, Troy, N. Y.	4
Hubs and Spokes, Mfrs. of.	
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Hydraulic Jacks.	
Budgeon Richard, 24 Columbia, N. Y.	12
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Hartford Steam Boiler and Inspection Co.	13
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Boydston Geo. A., 70 Wall, N. Y.	6
Boydston Geo. A., 70 Wall, N. Y.	6
Pettit Wm. H., 72 Wall, N. Y.	6
Iron, Corrugated, Manufacturers of.	
Corrugated Metal Co., East Berlin, Conn.	4
Moseley Iron Bridge and Roof Co., 5 Dey, N. Y.	4
Iron, Charcoal, Warm or Cold Blast.	
Quincy John W., 85 William, N. Y.	4
Iron Commission Merchants.	
Baldwin Cor., 333 Walnut, Phila.	5
Hand Jas. C. & Co., 614 and 616 Market, Phila.	5
Hoopers W. Graham, 419 Walnut, Phila.	5
Malin Bros., 228 Dock, Phila.	5
Iron, Pig, Importers of.	
Williamson James & Co., 60 Wall, N. Y.	5
Iron Dealers.	
Abel Brothers, 190 South, N. Y.	4
Bourne, Bedford & Co., Youngstown, Pa.	4
Borden & Lovell, 70 and 71 West, N. Y.	4
Cleveland, Brown & Co., Cleveland, O.	4
Coddington, T. B. & Co., 25 Cliff, N. Y.	4
Conklin & Huerstel, 99 Market Ship, N. Y.	4
Fuller, Lord & Co., 126 Greenwich, N. Y.	4
Fuller, Dana & Fitts, 110 North, Boston.	4
Gardner Wm., 575 Grand, N. Y.	4
Harrison & Gilson, 222 and 224 Water, N. Y.	4
Hard G. A., 28 Walnut, Phila.	4
Jackson & Chase, 206 and 208 Franklin, N. Y.	4
Judson B. F., 457 and 459 Water, N. Y.	4
Katharine Chas. F., 128 Walnut, Phila.	4
Packard, Goff & Co., Youngstown, Pa.	4
Peterson & Mann, 229 and 228 South, N. Y.	4
Pratt & Co., Buffalo, N. Y.	4
Richards D. W. & Co., 24 Broadway, N. Y.	4
Pope Thos. J. & Bro., 302 Pearl, N. Y.	4
Quincy John W., 85 William, N. Y.	4
Smith Gamal G. & Co., 343 Pearl, N. Y.	4
Starnes C. & Co., 203 and 205 West, N. Y.	4
Williamson James & Co., 60 Wall, N. Y.	4
Whitney Alfred R., 38 Hudson, N. Y.	4
Iron, Manufacturers of.	
Bosking & Co., 31 Beekman, N. Y.	4
Burden Iron Works, Troy, N. Y.	4
Cleveland Rolling Mill Co., Cleveland, O.	4
Coffin Wm. E. & Co., 8 Oliver, Boston.	4
Ellis W. E. & Co., 11 Battery March, Boston.	4
Everson, Graft & Macrum, 40 West, N. Y.	4
Fulton S. & Co., 412 Walnut, Phila.	4
Jones & Laughlins, Pittsburgh, Pa.	4
Sargent, Connelley & Cole, 80 Broadway, N. Y.	4
Lynchburg Iron Works, Lynchburg, Va.	4
Milwaukee Iron Co., Milwaukee, Wis.	4
New Haven Rolling Mill Co., New Haven, Ct.	4
Old Dominion Iron & Nail Works Co., Richmond, Va.	4
Oxford Iron Co., 11 Washington, Phila.	4
Phoenix Iron Co., 410 Walnut, Phila.	4
Rowland Wm. & Harvey, Phila.	4
Stirling Iron and Railway Co., 42 Pine, N. Y.	4
Iron, Swedish, Importers of.	
Jesop Wm. & Sons, 91 and 93 John, N. Y.	28
Mittler E. L., 69 William, N. Y.	28
Page E. L., 69 Boston, N. Y.	28
Iron, Manufacturers of.	
Styler Wm. H., 406 Liberty, Phila.	5
Lanterns, Manufacturers of.	
Dietz R. E. (Tubular), 94 and 96 Fulton, N. Y.	32
Howard & Morse, 4 Fulton, N. Y.	32
Shepard Sidney & Co., Buffalo, N. Y.	32
Lawn Mowers, Manufacturers of.	
Chadborn & Coldwell Mfg. Co., Newburgh, N. Y.	33
Lead and Tin Lined Lead Pipe, etc., Mfrs.	
Colebrook Lead Co., 21 Centre, N. Y.	3
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Bohannon Wilson, Broadway and Kosuth, Brooklyn, E. D.	3
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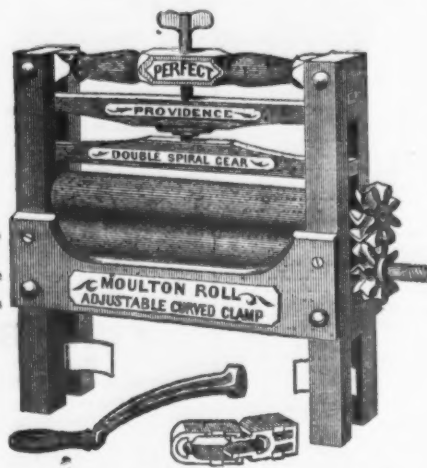
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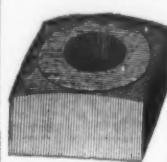
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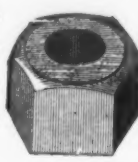
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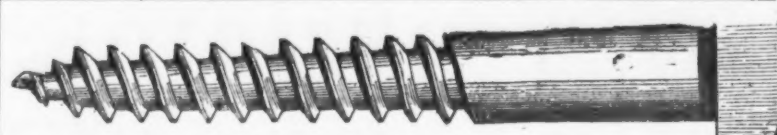
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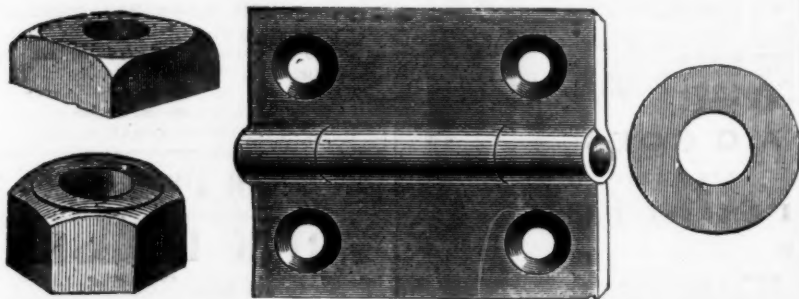
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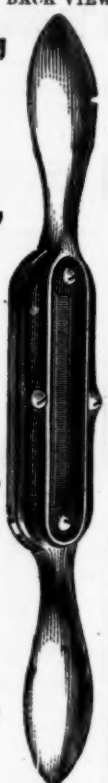
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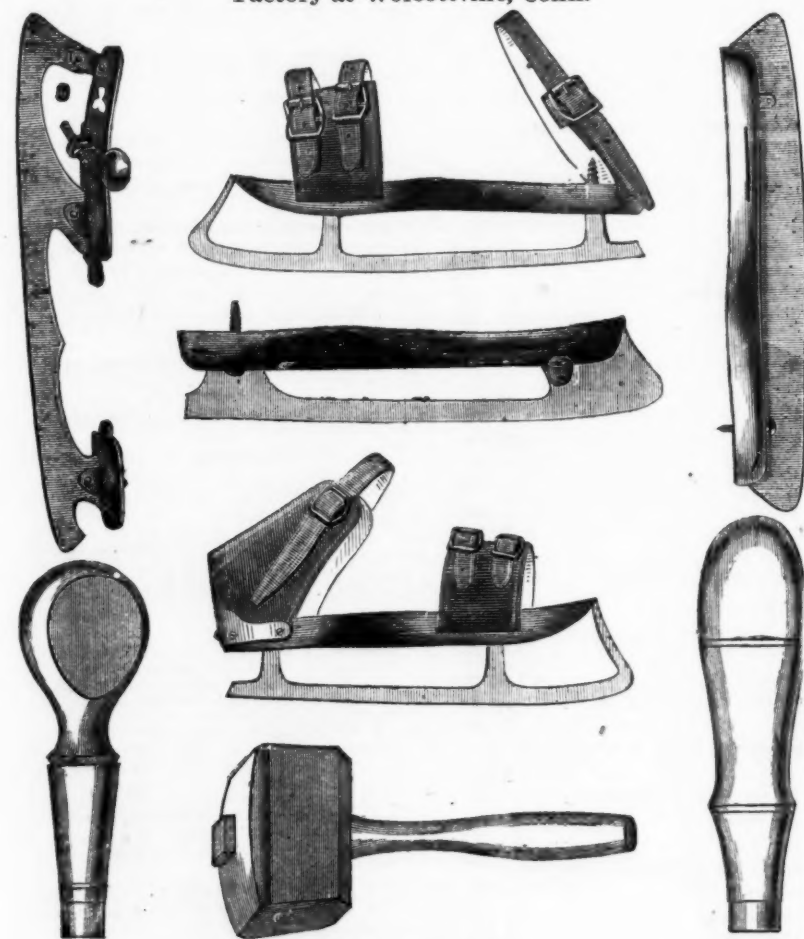
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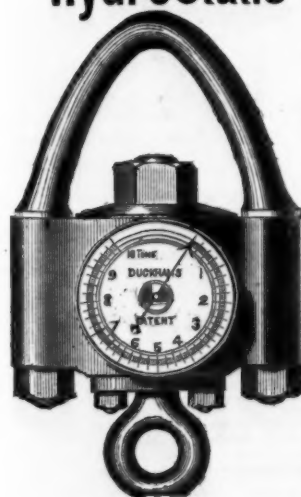
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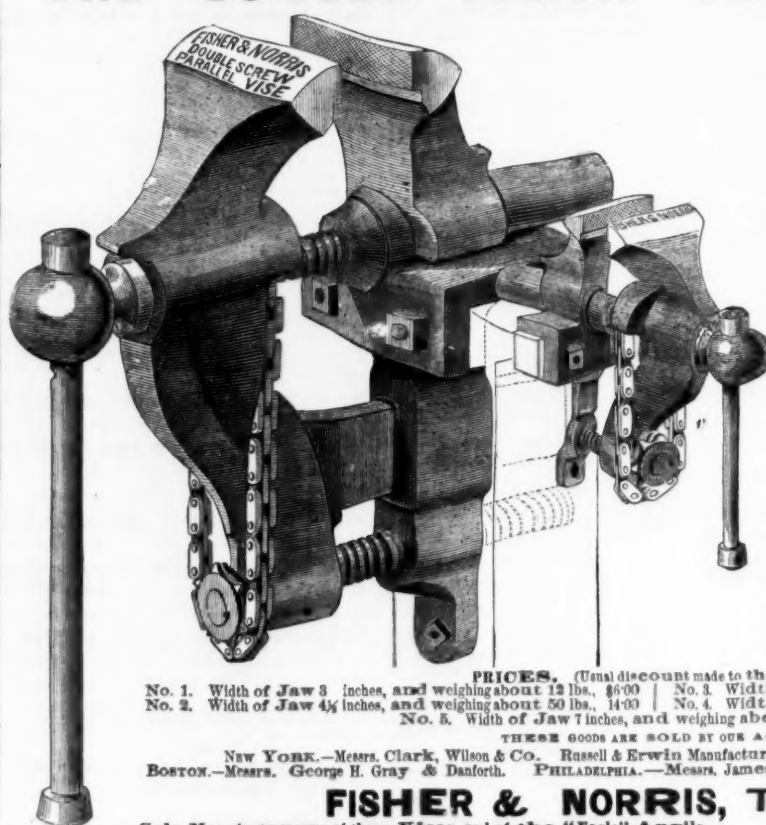
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New York, Thursday, December 11, 1873.

DAVID WILLIAMS Publisher and Proprietor.
JAMES C. BAYLES Editor.
JOHN S. KING Business Manager.

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City Subscribers will confer a favor upon the Publisher, by reporting at this office any delinquency on the part of carriers in delivering *The Iron Age*; also, the loss of any papers for which the carriers are responsible. Our carriers are instructed to deliver papers only to persons authorized to receive them, and not to throw them in hall ways or upon stairs; and it is our desire and intention to enforce this rule in every instance.

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Shall We Have Free Trade in Ships.

As most of our readers will doubtless remember, the National Board of Trade, at its last convention, passed a resolution favoring the abolition of the tonnage registry law and the admission of foreign ships, under a "reasonable" impost duty, to the American carrying trade. This resolution was justly rebuked by the American Iron and Steel Association in a resolution which will be found in the account of the recent meeting of that body in our issue of the 26th ult. The difference of opinion thus expressed has led to an interesting correspondence between Mr. Geo. L. Buzby, Secretary of the Philadelphia Board of Trade, and Mr. Samuel J. Reeves, President of the Iron and Steel Association, which has been given to the public in the *Bulletin* of that association, and which is of so much interest to our readers and the public at large that we give it space in our columns:

OFFICE OF THE BOARD OF TRADE,
PHILADELPHIA, NOV. 22, 1873.
Samuel J. Reeves, Esq., President American Iron and Steel Association, Philadelphia: DEAR SIR—Will you permit me respectfully to submit the text of the resolution, passed by the National Board of Trade at its late session in Chicago, on "American Shipbuilding Interests." It reads thus:

"Resolved, That justice to the ship-owning interest and the best welfare of the National Commerce alike demand that the right be conceded by law to American citizens to purchase tonnage, wherever built or owned, and to place it under the protection of their own flag, upon the payment of a reasonable duty upon the cost."

In reading the newspaper remarks of your address before the Iron and Steel Association on 20th inst., the above resolution is referred to, but no mention is made of the saving clause respecting tonnage. I am aware that speeches are often inaccurately reported, and that you may have alluded to this feature of the resolution. As a delegate to the National Board of Trade, I assure you there was a keen and spirited discussion, and that gentlemen entertaining your opinion fought strenuously to secure the clause exacting payment of duties on foreign built ships, as upon other imported merchandise. This was the best that could be done, and all that could be done. It was a long step in advance of anything that at previous sessions could be obtained from the Board.

Trusting you will excuse the liberty I have taken, I have the honor to be, very respectfully, yours,
GEORGE L. BUZBY, Secy.

OFFICE OF THE
AMERICAN IRON AND STEEL ASSOCIATION,
PHILADELPHIA, NOV. 24, 1873.
George L. Buzby, Esq., Secretary Board of Trade, Philadelphia: DEAR SIR—I beg to acknowledge receipt of your letter of the 22d inst., in which you call my attention to some remarks made by me at the annual meeting of this Association in the 20th inst., relative to the resolution adopted at a meeting of the National Board of Trade lately held at Chicago, recommending that "the right be conceded by law to American citizens to purchase tonnage, wherever built or owned, and to place it under the protection of their own flag, upon the payment of a reasonable duty upon the cost."

Until I read your letter I was not aware that the resolution as adopted was modified from the original proposition of the Free Trade section of the Convention, so as to make the anti-dote and virus go forth together. Nevertheless, it is evident, from what you state in your letter, that the amendment requiring foreign built vessels to pay duties as upon other imported merchandise was one of defense only, and "the best and all that could be done" in the way of opposition to the measure. Those who were instrumental in attaching the duty clause to the resolution deserve commendation from the advocates of American Industry. But iron shipbuilding in this country is at this time established on a firm basis, and is contending successfully with foreigners in the same kind of business. Under such circumstances the members of our Association are solidly opposed to any legislative interference in the onward march of this new development of American enterprise.

Only a short time ago it was alleged by these same Free Traders that iron ships could not be built in this country because of the dearth of iron, and they were persistent in their efforts to have the duty removed on imported iron used in the construction of ships. That argument has already been refuted by now American iron, admittedly better in quality also cheaper than the imported. Ships are now being built on the Delaware River and elsewhere as cheaply as on the Clyde, without the use of a pound of foreign iron. Though already in the market for themselves equal to any built abroad in the staunchness of their construction and in their sailing qualities.

These facts being patent to members of our Association, they felt it their duty to protest that it is not true "that justice to the ship-owning interest and the best welfare of the national commerce alike demand that the right be conceded by law to American citizens to purchase tonnage wherever built or owned, and to place it under the protection of their own flag." From the beginning of our national government to the present time our policy has been exactly the reverse of this declaration, and we trust that policy will not be altered just at the time when American ingenuity and enterprise have proven a change to be unnecessary. The flag of our country will float more proudly over ships built out of American material and owned by American citizens than from the mast heads of the launched in the Clyde.

In the expression of these views I feel quite sure that you will agree with me. Thanking you for calling my attention to the saving clause appended to an objectionable resolution passed by the National Board of Trade, I am, very respectfully, yours,
SAMUEL J. REEVES, Pres't.

This correspondence is of especial interest, for two reasons—it shows the true character of the National Board of Trade on the one hand, and presents on the other a strong and unanswerable argument against any injudicious modification of our registry law. A body in which the friends of protection have to make a strong fight to secure the appendage of a saving clause to a resolution designed to be a square declaration in favor of free trade, is not a body whose opinions on matters connected with the industrial development of the country are entitled to favorable consideration among the firm supporters of the tariff. At all events, the National Board of Trade will bear watching, and we hope the local boards will keep this in mind in choosing delegates to it, especially when its utterance are likely to be seized upon as texts for free trade sermons and suggestions for free trade bills in Congress.

But while the friends of protection doubtless did the best they could to modify the resolution which they were unable to defeat, we quite agree with Mr. Reeves that the "saving clause" to which Mr. Buzby calls attention does not make the resolution acceptable. We do not want British built ships at any price or upon any terms. We can build them cheaper and better at home, and there is no such urgent demand for the increase of our merchant navy as to necessitate the repeal of our registry laws, especially at a time when the ship building industries of the Atlantic seaboard are experiencing so rapid and healthy a development. Mr. Secretary Richardson reports, on the authority of exact data furnished by Dr. Edward Young, that "official numbers were 'awarded by the Bureau of Statistics to '1699 vessels of the aggregate tonnage of '313,743 tons, while during the year preceding, the addition to our mercantile 'marine was only 38,621 tons. From the '1st of July to the 1st of November, 1873, 'documents have been issued to 1288 completed vessels, of 181,000 tons in all, 'while such returns as have been received, 'incomplete as they are, indicate that 'there were building in October last 336 'vessels of the tonnage of 177,529 tons; 'including 69 steamers with a tonnage of '67,067 tons, of which 18 iron steamers, 'with an aggregate of 38,492 tons, are in 'course of construction on the Delaware."

Such an expansion of our shipbuilding industries would not have been possible had foreign bottoms been admitted to an American registry during the past year, and we cannot do better than to protect this industry in every possible way.

The probable effect of the repeal, or essential modification, of our registry laws would, perhaps, be a considerable increase in the number of ships carrying our flag; but were we to get this increase tonnage, what would we have? Great Britain has attained her position as a builder of iron ships by sacrificing everything to cheapness, and we have eminent British authority for saying that the quality of vessels built in British yards is steadily degenerating as the cost of materials and labor increases. The plates used by English and Scotch builders possess an average resisting strength of 20,000 lbs. to the square inch—in this country iron would be considered wholly unfit for use which would not develop a strength of from 40,000 to 60,000 lbs. We do not say this has always been so, for when ships were first built of iron the quality of metal employed was considered as of more importance than economy in the cost of materials employed. But it was soon discovered that a saving could be effected by using iron fit for no other purpose. Describing the means employed to reduce the cost of British tonnage, our able London contemporary, *Iron*, says with commendable candor:

Plates through which a foot clad in a stout boot might be kicked with ease, were considered good enough to stand between man and enemy. Metal so rotten that it broke in pieces when carelessly dropped on a hard surface, was employed in the construction of vessels destined to be manned by Englishmen—by husbands and fathers. All considerations but the single one of economy were sacrificed by the unscrupulous few to whom the lives of their fellow men weighed but little against a heavy balance at their bankers. This fertile cause of disaster was doubly dangerous on account of its treachery. Ships fulfilled the requirements of surveyors, and were classed according to their outward appearance, while their real rottenness remained concealed. Hence a dire catalogue of catastrophes, one of which, at least, has secured a dark page in history.

But we have other and even stronger condemnation of cheap British iron ships, from men whose position and character render it impossible for them to misrepresent a subject they venture to discuss in public. In our issue of May 1st we published a portion of the address of Mr. Rundell before the Institution of Naval Architects, which makes such startling statements that we cannot resist the temptation to reproduce them at this time. Mr. Rundell said:

If I am informed rightly, the iron at present used for shipbuilding is really getting by degrees worse and worse. Why it is I do not know, and it would not be fair, perhaps, to ask a shipbuilder any question on that subject, because it is one which he is only interested in in a secondary manner. It has been my fortune for many years to see not only new ships which have been built, but wrecked vessels, and I have seen some wrecked iron vessels that you would fancy were built of glass instead of iron—they were broken in that manner that they more resembled plates of glass than plates of iron. Perhaps in a ship at sea it does not matter very much whether she is built of this very good iron or very inferior iron, and you will say, if she gets on shore, she has no business there; she was not built to be on shore, but to be at sea, and as long as she is at sea it is very little consequence whether she has the cheap and brittle iron, or the expensive malleable iron, or the material that was at first used. Of course this would lead to distinctions between boiler-plates and boiler-plates of different qualities; these qualities, as I said before, are generally deteriorating.

In the discussion which followed no one ventured to contradict Mr. Rundell. On the contrary, his statements were confirmed and approved, and one member, Mr. Luke, said:

I quite understand what Mr. Rundell means by glass plates. I have seen plates which, if you let them fall, would break like glass. Inferior iron plates when fired at. With reference to the quality of the iron, it can be made now quite as good as it was formerly. We are getting iron at the Admiralty as good as ever it was made, and perhaps better. Shipbuilders have made now the same ships just as good as when the Richard Cobden was built. If the price is paid for it. It is simply a question of price. There is so much competition now in the mercantile shipping world that a shipbuilder can scarcely find it his duty to put in the iron which he knows, in his own conscience, should be put into a ship. The ship-owner goes to the cheapest market, and then depends upon the insurance. If the ship is lost the insurance will pay him for it.

We think the public will fully agree with Mr. Reeves that we do not want such ships at any price. We have no doubt there is a large and influential class of ship owners who, like the British shippers described by Mr. Luke, care nothing for the safety of lives and freight provided they can buy ships abroad which are cheap and insurable; but we should have but little to be proud of, or to grow rich upon, in a merchant marine made up of such vessels as can now be had from foreign builders at a lower price than vessels of the same tonnage and capacity can be built for at home.

Locking Up Ore and Coal Lands Under Bogus Leases.

There is a large and dangerous class of swindling speculators against whom the owners of ore and coal lands in newly developed sections need to be warned, and we invite our exchanges in the Southern and Southwestern States to aid in giving publicity to what we shall have to say concerning them. The speculators to whom we refer, having neither capital nor credit, have devised a means of speculating in desirable mineral lands by securing control of them under bogus leases. When a new country is opened which promises rapid development, they rush in and prospect for the best veins. Finding such are likely to increase in value within a reasonable time, they represent themselves either as capitalists or as agents of capitalists, and induce the owners of the lands they want to control to give them long leases of the mineral deposits thereon. They agree to assume all the expense of opening

the mines and providing facilities for the transportation of the products, and promise to pay royalty of ten cents per ton, or more, on all minerals mined. The offer seems a fair one, and the swindler is usually able to so impress his victim that the latter readily falls into the trap. Should he have any suspicions, however, his accommodating "capitalist" will cheerfully obligate himself to begin work within six months or a year, and to take out a certain amount annually when the mines shall have been fairly opened and a given amount raised. The bargain concluded, the swindler puts the lease in his pocket and goes off. If he is not under obligations to open the mines in a certain time, he does nothing to them; if he is, a day's work with one man and a shovel fulfils the terms of the lease. He has no intention of opening the mines at any time. The lease has cost him nothing, and he holds it until the value of the land shall have so increased that he can sell it for a good price to some one who wants to open the veins and work them. In the meantime, the minerals are locked up. The owner of the land cannot dispose of them, and he is often kept waiting for years in poverty and disappointment, while his neighbors are growing rich upon ores and coals not as good, perhaps, as his own. He is powerless in the hands of the rascal who has swindled him, and who has obtained for nothing a valuable lease which he holds until some one will buy him off and release the mineral wealth he has locked up. Hundreds of thousands, perhaps millions, of acres of valuable mining lands of the South are thus leased to irresponsible adventurers, and capitalists who seek legitimate and profitable investments in lands, mining operations or iron manufacture, must take the second choice or pay these shrewd rascals tribute. We know of no remedy for this evil except to put the owners of such lands on their guard. Designing knaves will always find fools to swindle, doubtless, but if their rascality is exposed, some will be warned who might otherwise become easy victims through over-confidence in specious misrepresentations.

The Centennial.

In another column of this issue we publish an official circular from Mr. A. T. Goshorn, Director General of the Centennial Exposition, which will be found of interest to intending exhibitors. In a great undertaking of this character, the progress of arranging the preliminaries is necessarily so slow that we have no facts of especial interest to present at this time in addition to those which have already appeared in these columns; but we are able to state, on the authority of Mr. Goshorn and his responsible assistants, that the enterprise is progressing favorably, and that, notwithstanding the financial disturbances, the outlook for the future is full of promise. The Commission have, we are informed, about three millions of dollars available funds with which to begin building operations, and the prospects of securing another two millions are good if the pledges already made are fulfilled. The sum of three millions counted as available has not all been paid in, we believe, but the subscriptions are in such shape that they can be collected as rapidly as the money may be needed to meet expenses incurred. It must be remembered, however, that the drain upon the treasury of the Board of Finance will be very heavy for the next two years, and that any unnecessary delay in supplying the Board with money will render it the more difficult for the Commission to complete the great work of preparation within the two years and a half remaining. The adoption of a plan, of which some account has already been given in these columns, renders it possible for the Commission to push the work forward as soon as the drawings and specifications are ready, and we are assured they will do their part of the work with efficacy and promptness. It only remains for the people of the country, and for Congress, to afford them liberal pecuniary aid, and we believe they will do this as soon as the commercial and industrial activities of the country are resumed and confidence fully restored. We are glad to know that New York, city and State, is likely to render efficient and substantial aid to the movement at the time when aid is most needed, and that no serious difficulties are apprehended in raising in the several States and Territories the amounts they are asked respectively to contribute.

That the iron trades of the country will be fully and most creditably represented in the exposition, we have no reason to doubt; and so far as our influence in these trades extend, we would use it in favor of prompt and energetic action in the cause of a movement which is nothing if not national in the broadest sense. The American Iron and Steel Association have set a worthy example in undertaking the great and costly work of collecting and classifying

for exhibition the iron ores and coals of the United States, and several important trades having representative national associations have already adopted the same wise policy. The advantages of such a plan are obvious, since the Commissioners are thus relieved of all responsibility beyond that of allotting the requisite space, and those who are most deeply and actively interested in the progress of the several trades are enabled to make a far more creditable showing of that progress than would be possible were intending exhibitors left to send such goods as they might see fit without consultation with each other or communication with any responsible national trade committee. It will also tend to prevent those delays on the part of individual exhibitors which so often render the opening of an exhibition of this character a disappointment to visitors and a source of annoyance and mortification to all who are interested in their success. We do not want early visitors to go away disgusted from Philadelphia as they did from Vienna, nor do we want them disappointed with any department representing the iron trades and mechanical industries of the country. We have no doubt the exhibition, so far as this country is concerned, would in any case meet all reasonable expectations, but it requires no argument to show that the more perfect the organization of the several trades, the more complete, symmetrical, harmonious and generally satisfactory will be the showing of their productions.

Since writing the article on the iron and coal resources of the territory surrounding the City of Chattanooga, which appeared in our last issue, we have been shown a valuable geological map of the district, prepared by Mr. S. B. Lowe, proprietor of the Vulcan Iron Works, of that city, and which will shortly be published in the best style of the lithographic art. The map shows the location and boundaries of all the iron and coal deposits of the section, also the railroads and navigable rivers. Mr. Lowe has had this work in mind for several years, and during the past twelve months has employed two efficient engineers in making surveys and topographical drawings, and the map will possess much value for all who are interested in the mineral resources of the three States through which these coal and ore veins extend. The three kinds of ores described in our article, the coals also mentioned, and the copper and slate beds are shown in their relation to each other, and prove that our statements concerning the coal and iron resources of this favored section were not exaggerated in any particular. We are informed that the map will be ready for delivery early in January, and will be sold by subscription at \$5. Size, 27 by 36 inches. Subscriptions will be received by Mr. H. B. Newhall, No. 11 Warren street, New York, and by the publisher, Mr. S. B. Lowe, Chattanooga, Tenn.

THE CENTENNIAL EXPOSITION.

Information for American Exhibitors.

The following circular for the information of intending American exhibitors has been issued from the office of the Centennial Commission:

OFFICIAL ORGANIZATION.

1. An Act of Congress, approved March 3, 1871, provided for the national celebration of the One Hundredth anniversary of the Independence of the United States by the holding of an exhibition of arts, manufactures, and products of the soil and mine. A proclamation by the president, issued July 4, 1873, announced the exhibition and national celebration, and commended them to the people of the United States and of all nations.

2. The Act of Congress provided for the organization of the United States Centennial Commission, "whose duty it shall be to prepare and superintend the execution of a plan for holding the Exhibition." Upon the nomination of the governors of the several States and Territories, the President appointed the members of the Centennial Commission, as follows:

States and Territories. Commissioners. Alternates.
Alabama Wm. M. Byrd . . . James L. Cooper.
Arizona R. C. McCormick John Wason.
Arkansas E. W. Gantt . . . Alex. McDonald.
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Colorado J. Marshall Paul . . . C. Meeker.
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Delaware H. F. Askew . . . John H. Rodney.
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Idaho T. Donaldson . . . Jas. S. Reynolds.
Illinois F. L. Matthews . . . L. Weldon.
Indiana J. L. Campbell . . . F. C. Johnson.
Iowa Robert Lowry . . . C. F. Clarkson.
Kansas John A. Martin . . . G. A. Crawford.
Kentucky Rebt. Mallory . . . Smith M. Hobbs.
Louisiana John Lynch . . . Edw. Pennington.
Maine Joshua Nye . . . Chas. F. Kimball.
Maryland Geo. T. Eade . . . John W. Davis.
Massachusetts Geo. B. Loring . . . Wm. B. Spooner.
Michigan James Himey . . . C. B. Grant.
Minnesota J. F. Williams . . . W. W. Polwell.
Mississippi O. C. French . . . Samuel Hays.
Missouri John McNeil . . . Alex. A. Largery.
Montana W. H. Claggett . . . Patk A. Largery.
Nebraska Henry S. Moody . . . Jas. W. Furnas.
Nevada W. W. McCoy . . . R. W. Haines.
New Hampshire E. A. Stray . . . Asa P. Gate.
New Jersey O. Cleveland . . . John G. Stevens.
New Mexico E. W. Little . . .
New York J. V. L. Pruyn . . . C. H. Marshall.
North Carolina A. T. Goshorn . . . W. W. Griffith.
Ohio A. T. Goshorn . . . W. W. Griffith.
Oregon J. W. Virtue . . . A. J. Dufur.
Pennsylvania Dan J. Morrell . . . Asa Packer.
Rhode Island Geo. H. Corlies . . . Samuel Powell.
South Carolina William Garney . . . A. Cameron.
Tennessee Thos. H. Colwell . . . Wm. F. Prosser.
Texas W. H. Parsons . . . John C. Chew.
Utah J. H. Wickizer . . . O. G. Sawyer.
Vermont M. Goldsmith . . . Henry Chase.
Virginia W. W. Wood . . . E. B. Bagwell.
Washington Ter. Elwood Evans . . . A. S. Abernethy.
West Virginia A. B. Boteler . . . A. J. Sweeney.
Wisconsin David Atwood . . . E. D. Holton.
Wyoming H. Latham . . . H. B. Lamborn.

The Officers of the Centennial Commission are: President, Joseph R. Hawley; Vice President, Alfred T. Goshorn, Orestes Cleveland, Wm. M. Byrd, John D. Creigh, David Atwood, Thomas H. Coldwell; Director-General, Alfred T. Goshorn; Secretary, John L. Campbell;

Counselor and Solicitor, John L. Shoemaker.

3. By a further Act of Congress, approved June 1, 1872, there was created the Centennial Board of Finance, which is charged with the financial administration of the preparations for the Exhibition. This board was duly organized on April 30, 1873, by the election of a Board of Directors, with John Welsh, Esq., president, and Frederick Fraley, Esq., secretary and treasurer.

4. For the more efficient conduct and management of its affairs, the Centennial Commission has entrusted the direction and supervision of the Exhibition to Commissioner Alfred T. Goshorn, of the State of Ohio, as Director General.

STATE ORGANIZATIONS.

5. To provide for the efficient adjustment of the preliminaries to the Exhibition, and to organize a uniform system to this end throughout the United States, the several States and Territories are invited and recommended to appoint, as early as possible, State Centennial Managers, not exceeding five in number. They should be selected entirely with regard to their familiarity with the resources, arts, and products of their State, their business experience, and executive skill. The State managers, with the United States Commissioner and Alternate Commissioner, shall constitute the State Board of Centennial Managers for each State and Territory.

On the State Board will devolve all the responsibility of organizing its State or Territory, and of securing its thorough representation in the Exhibition. It will have to care for the interests of its own State and of its citizens in matters relating to the Exhibition; to disseminate information about it; to issue invitations to participate; to receive and pronounce upon applications for space; to apportion the space placed at its disposal among the exhibitors from its State; and to supervise such other details relating to the representation of its citizens in the Exhibition as may from time to time be delegated to it by the United States Centennial Commission.

It is of extreme importance that the State Boards shall be organized and at work at the earliest day possible. It is hoped that all may have been appointed before April 1, 1874.

PRELIMINARY REGULATIONS.

6. The Exhibition will be held in buildings erected for the purpose in Fairmount Park, in the city of Philadelphia, and will be opened on the 19th day of April, 1876, and closed on the 19th of October following.

7. After the organization of the State Boards, all communications to the Centennial Commission, or to the Director General, relative to articles to be exhibited or requirements for space, must be made through these Boards.

In determining upon the articles to be admitted to the Exhibition, each State Board should so discriminate as to the character and quality of the objects it selects, that the aggregate exhibition of its State shall consist of the best specimens of its products.

8. Full diagrams of the buildings and grounds will be furnished to the State Boards, showing the location and area assigned to each State and Territory in the Exhibition buildings, on or before the 4th day of July, 1874.

As soon thereafter as may be, but not later than November 1, 1874, the State Boards are requested to notify the Director General whether they desire any increase or diminution of the space offered them.

By the 1st of March, 1875, the Director General will acquaint each State Board with the amount of space at its disposal, and the State Board shall at once apportion it among the exhibitors of its district.

Before October 1, 1875, the State Boards must furnish the Director-General with detailed plans of their allotted space, showing the space of each single object to be exhibited, and also with lists of the exhibitors, and all other information necessary for the preparation of the official catalogue.

9. The Commission is assured that liberal reductions in rates for transportation will be made on railways and water lines in the United States. Specific details as to these rates will be given in a future communication.

The exhibitors or the State Boards must provide for all the expenses of transportation, of the delivery and unpacking of goods, of setting them up in the Exhibition Building, of removing the empty cases, and of repacking and re-storing the goods at the close of the Exhibition. Provisions, however, will be made for storing the cases during the continuance of the Exhibition, without charge to exhibitors, and with as little inconvenience or delay as possible.

10. Heavy articles requiring special foundations, or others which from any cause are difficult of location or adjustment, should, by special arrangement, be set in place as soon as the progress of the work upon the buildings will permit. The general reception of articles at the Exhibition Buildings will commence on January 1, 1876, and no articles will be admitted after March 31st.

Space not occupied on the 1st of April, 1876, will revert to the Director-General for re-assignment.

11. An official catalogue will be published by the Centennial Commission, containing (1) the name of each exhibitor; (2) the name of each article exhibited; (3) the group and class to which the object is referable; (4) the location of each article in the buildings or park; and (5) an alphabetical index of exhibitors' names.

The right of publishing and selling the official catalogues is expressly reserved to the Centennial Commission.

12. Exhibitors will not be charged for space. Steam power and water will be supplied gratuitously, under rules to be hereafter announced. It will be necessary, in making application for either of these, for the exhibitor to state the quantity required, and the manner in which it is to be employed.

The exhibitors or State Boards must provide, at their own cost, all cases, shelving, counters, fittings, etc., which they may require; and all countershafts, with their pulleys, belting, etc., for the transmission of power from the main shafts in the machinery hall. All arrangements of articles and decorations must be in conformity with the general plan, and under the inspection of the Director General.

State Boards must obtain the written approval of the Director General before constructing roads or earthworks in the grounds assigned to them.

The Centennial Commission will take precautions for the safe preservation of all objects in the Exhibition; but it shall in no way be responsible for damage or loss, or for accidents by fire or otherwise, however originating. Exhibitors or State Boards may insure their own goods, for which favorable facilities will be arranged; and they may employ agents of their own choice, subject to the approval of the Director General, to guard them during the hours the Exhibition is open to the public.

13. The State Boards, or the individual exhibitors, or such agents as they may designate, shall be responsible for the receiving, unpacking, and arrangement of objects, as well as for their removal at the close of the Exhibition. But no person shall be permitted to act as such agent until he can give to the Director-General written evidence of his having been approved by the proper State Board.

14. Articles that are inflammable, explosive, or in any way dangerous or offensive, will not be admitted to the Exhibition, and, if introduced, will be immediately removed. The Com-

mission, will, from time to time, make any particular regulations concerning the exhibition of such substances that may seem necessary.

15. Objects sold can in no case be removed before the close of the Exhibition.

16. Photographic or other reproductions of articles exhibited will only be allowed upon the joint assent of the exhibitor and the Director-General. But general views of portions of the building may be made upon the Director-General's sanction.

17. Each person who becomes an exhibitor thereby acknowledges and undertakes to keep the rules and regulations established for the government of the Exhibition.

18. Special regulations will be issued concerning the exhibition of fine arts, the organization of international juries, and awards of prizes, and on other points not touched upon in these preliminary instructions.

A. T. GOSHORN, Director-General.

PHILADELPHIA, November 12, 1873.

PHILADELPHIA CORRESPONDENCE.

PHILADELPHIA, Dec. 8, 1873.

Notwithstanding that the week under review has been what is usually a dull period, being "document week," when the annual statements of the executive officers of the administration are received, there is to be noted a very decided improvement in nearly all kinds of trade. In iron your correspondents in this and other markets keep you posted, but the improvement is notable also in other branches. The cotton mills and print works of Manayunk are all running again, and many on full time, the others proposing a full resumption early in January. The wool men are also active, and there has been quite a speculation in this line, with an advance of from one to three cents per pound. The streets once more show lines of loaded drays and the steamers are all crowded with freight, while more is seeking outward capacity than can be accommodated. I note these features of general trade as of equal importance to the iron manufacturer and hardware dealer as to the dry goods merchant.

Everything now points to a busy and active spring trade to open earlier than usual, and preparations are being made with this view. Notwithstanding the contradictory opinions in financial matters held by members of Congress—no less than three hundred different bills having, it is said, been prepared on the project—there is every probability that an extension of one hundred millions will be made to the currency, and that some regulation will be made as to the issue of a convertible bond, bearing 3-45 per cent. interest. That this is almost certain appears from the fact that some corporations who have been hesitating in engaging in extensive operations, of which they will hear further, have determined to go ahead, after having thoroughly canvassed the disposition of Congressmen on the subject. The war feeling, though not so blatant as at the first receipt of the news, is growing daily stronger, and many conservative men, who would otherwise deprecate hostilities between our country and any other, look upon a possible Spanish war now as an escape from labor and other troubles likely to be otherwise encountered. The late Emperor of the French thoroughly understood the necessity of keeping the French people occupied to ensure peace, and the successful party in the United States, to retain power, must invariably so shape things as to keep wages high and currency abundant. In this respect the two peoples are very similar. There are two formidable strikes announced at the close, one of which may seriously affect the general public. The first is that of the carpet weavers, always a troublesome element, but who this time do not seem unanimous in their action. The second is among the train men of the Reading Railroad Company. The latter have struck against a ten per cent. reduction of wages. Both the company and the men are firm in their determination to hold out, and the effect may be serious as it will prevent many collieries from working, and has indeed already caused the suspension of several. The hands of the Mahoning and Broad Mountain and Shamokin branches first stopped work, and those of the main line refused to take their places. To further complicate the matter, the miners in many collieries have struck, having three-quarter time. All this is bad, as any advance in coal now would stop until spring many works which would otherwise resume.

The new blast furnace finished here this year, by Stephen Robbins & Son, will be shortly blown in, and thus test the much mooted question whether the banks of the Delaware are or not the proper place to make pig iron. A description of this furnace has appeared in your columns. The engine has lately been steamed out, and every thing works "like a clock." Should this venture be successful, there is no doubt that our river banks will be the site of many large blast furnaces before long. Six new furnaces in this immediate vicinity on the river are projected, so far at least as to have the capital secured, which does not look like fear of the future iron market.

Among the news of the week is the completion of the Illinois, the fourth steamer of the American line, she will have steam on her engines on Wednesday, and on the 24th instant will make her trial trip, and take her place in the line on January 1st, 1874. The Messrs. Cramp deserve great credit for the way in which they have carried out their contract for these ships. They have had about every obstacle to contend with which could have been foreseen, and a host which no one counted on. Iron advanced far above any one's expectations, labor followed suit, opposition lines, and, finally, the panic—came before their contract was completed, and yet every ship has been up to time, and in qualifications surpassed the requirements. This firm will also test the engines of the Columbia, of Clyde's New York and Havana line, this week, which ship is to go to sea by New Years. The Red Star line received a new ship from abroad during the week, the Nederland, which is like the Vaderland, her consort, a first-class brig rigged steamer, 345 feet long, with 40 feet beam, and a passenger capacity of about 1000 passengers of all grades. She has compound engines of the best make, and is rated at 11 knots under steam alone, with a daily consumption of 25 tons of coal. This vessel arrived on Monday and cleared on Saturday again with a full assorted cargo. The monitor Manhattan also sailed again on Saturday, having been put in trim at Wilmington after her disaster. The trouble was that she went to sea with her turret in fighting trim, and ventilating funnels open, which latter are only intended for port, and, consequently, took in much too much water. The big gun of the navy, the Terror, double turreted monitor, is nearly finished, and will clear for "Key West and a market" this week. She is said to be the most formidable iron war ship afloat. The Canandaigua frigate, and Ajax, single turret monitor, are nearly ready, and the navy yard force is still working "double turn," with 822 men in the construction department, 91 in docks, 234 at steam engineering, 168 in equipments, and a host more in outside jobs.

There have been several Western and Southern iron men in town lately, looking after blast furnace machinery, among whom were the presidents of the Etina Iron Works, of Lawrence county, Ohio, and of the Rising Fawn Iron Works, of Dade county, Georgia. The

works of the former are well ahead, and are to be models, it is said; will have two furnaces, one of them already supplied with the Fairlie self-coking apparatus, and both furnished with the Whitwell hot blast stove, by which the blast may be heated to 2000° with safety. I know that the subject of hot blast is the red rag to the blast furnace men, but the Whitwell hot blast fire-brick stoves are fast coming into the same favor here as in England and on the Continent. They have already been adopted by the Cedar Point Iron Co., of Essex, N. Y., which has four buildings; the Harford Furnace Co., of Maryland, which will have two; the Rising Fawn Co., of Georgia, which will use eight; the Etina Furnaces, near Ironton, Ohio, which are putting up eight; and the Meier Iron Co., of Carondelet, Mo., which will have eight also. Every form of hot blast has its friends, but one which can heat the blast to 2000°, and keep it steady at 1200° temperature without expense for repairs, and as this has been done in one case in England for five years, with only an outlay of £50 for repairs, deserves notice, and the attention of furnace men.

Messrs. Morris, Tasker & Co., the great tube and pipe makers, have lately introduced a novelty which would indicate value to many trades. This is the "vulcanized rubber coated iron tube." It is claimed for this article that for water passage, hot or cold, it is far superior to galvanized iron, or other pipes. An examination by Booth & Garrett, the well-known chemists, results in the statement that it will bear a high degree of heat—over 300°. Indeed, it is prepared at 400°. Gas and water have no possible effect on it, and the coating firmly resists sulphuric and muriatic acids and caustic potash solution. It is further claimed that this invention can be applied to all articles of iron now galvanized, with much better results. It is not likely that a firm with the reputation of Morris, Tasker & Co. would introduce a trade article without positively an improvement, and hence this may be regarded in the light of a wrinkle of probably great value. In the simple matter of ship plates and framing alone it would seem to offer exactly what builders have been seeking, and tests of the action of iron coated with vulcanized rubber in contact with copper should be made. If it resists the chemical action in such a test, it would be an invaluable discovery.

The "one rail railroad" was briefly noticed some time since in my correspondence as a success. The proprietor of the system is now fitting up his track in a skating rink here to publicly test a four-ton steam bicycle, and which test I will describe when it is made. The locomotive I have not seen, but the model works splendidly in a circular track, and nothing short of an earthquake can throw it off the rail. The track is of timber, eighteen inches high, and only requiring 12 feet of timber measure to the linear foot of track. The rail, either of cast-iron or T shape, is fastened to the apex of the conical track, and on this two grooved drivers placed tandem, like those of a bicycle, travel. But the grand feature is the safety system of tangential wheels, which term I use for lack of a better, and which projecting down and under the body of the locomotive, at an angle of 45°, engage the sides of the prismoidal track and balance the bicycle. These offer little frictional resistance, traveling as they do against the sides of the track, and enable the passage of a curve of smaller radius than has ever been accomplished in engineering; the patentees claiming indeed to run on a curve of only 33 feet radius.

The engine and cars cannot possibly leave the track, and any rate of speed may be gained which the power will furnish without danger of derailment. The design was originally for an elevated street railway, and the locomotive is built for such a road in Atlanta, Georgia, but the advantages for new country railroads, coal and ore roads, and mine roads, are manifest. The whole road can be built and equipped for less than half the cost of an ordinary road, and for your people who want to get from the Battery to Harlem River in short time this invention offers the means. For country purposes it can be built entirely of timber at very low cost.

The importations of iron and metals for the week ended the following:

Tin Plate—N. & G. Taylor, 954 boxes; N. T. Pratt, 455 do.; Hall & Carpenter, 200 do.	Steel Axes—Naylor & Co., 104.	Wire—Peter Wright & Co., 2 cases; F. W. Moss, 5 cases do.	Files—F. W. Moss, 3 cases.	Hardware—F. W. Moss, 1 case; Bailey & Co., 2 do.	Boiler Plates—C. F. Rump, 100 bbls.	Machinery—Order, 2 cases.
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The following figures represent the statistics of coal carried by the Philadelphia and Reading Railroad to Nov. 30th, ult.

Over main line and Lehigh Valley.....	4,137,636
Over lateral shipments by Lehigh Canal.....	735,047
West of N. Central R. W. & C. & W. P.	301,838
West and South from Pine Grove.....	107,595
Consumed on laterals.....	150,770
Lehigh and Wyoming.....	407,261
Total anthracite paying freight.....	5,880,149
Bituminous coal.....	310,366
Total of all kinds paying freight.....	6,190,515
Coal for Company's use.....	343,050
Anthracite.....	13,087
Total.....	356,137
Total of all kinds.....	6,546,553
Tonnage on Schuylkill Canal.....	743,736

Special Notices.

To Lease on Royalty.

A tract of eight hundred acres of Iron Lands, in Luzerne county, Pa. Five veins of ore aggregating fifteen feet thick. One vein of Manganese Ore, well adapted to the manufacture of steel.

Call on or address **JOSEPH SMITH,** Stoddardsville, Luzerne Co., Pa.
Or **M. R. Murphy,** 441 Broadway, N. Y.

THE CANADIAN BANK OF COMMERCE.

Capital - - \$6,000,000, Gold.
Surplus - - \$1,500,000, Gold.

The New York Agency, No. 50 Wall Street, buys and sells Sterling Exchange, makes Cable Transfers, grants Commercial Credits, and transacts other Banking Business.

J. G. HARPER,
J. H. GOADBY, Agents.

CHARCOAL IRON.

Parties owning a large and very superior Furnace, 90 miles from Cincinnati, and an unlimited supply of the best Iron Ore, adjoining it, with abundance of timber for making Charcoal, wish to enter into arrangements with men of experience and means to run the Furnace for a term of years, under arrangements to be agreed upon. There is no place in the United States where Charcoal Iron can be made at as low a cost, or where transportation to market will cost less.

JOHN A. POMEROY,
No. 47 West Second St., Cincinnati, O.

Special Notices.

Map of the Mineral Resources of Chaitanoga, Tennessee, and Vicinity.

Compiled from surveys made with a special view of showing the location and boundaries of the three different kinds of Iron Ores and Coal Measures lying within a radius of about one hundred and twenty-five miles of Chattanooga. It also shows the different Railroads and Navigable Rivers and principal towns within this district, and routes to Washington, New York, Louisville, St. Louis, Cincinnati, Memphis, New Orleans, Mobile, and principal ports on the Atlantic Coast. This map is not published in the interests of any individuals nor landed proprietors, but with the view of showing to parties who may be interested in the manufacture of Iron a section of country containing three different kinds of Iron Ores (which are shown in different colors), as well as coal in the greatest abundance, and their relative positions to each other. The map is gotten up by the publisher after an intimate knowledge of the country for twelve years, the last year of which he has employed two competent engineers in making special surveys, with a view of making it as nearly accurate as possible. It is about 27 inches by 36 inches in size, upon a scale of 15 miles to one inch, and printed on firm linen paper and put up in cases. It will be sold by subscription only, at the price of five dollars, and will be ready for delivery about the 25th of January next. Subscriptions can be made to the publisher, **S. B. LOWE,** Chattanooga, Tennessee, to the *American Manufacturer*, Pittsburgh, Pa., or to **H. B. NEWHALL,** No. 11 Warren St., New York.

Translations and Condensations.

The undersigned, commercial Editor of *El Cronista*, the Spanish Government paper in this city, and Foreign Editor and Translator of the *Deutsche Zeitung*, has made it a specialty for years past to translate industrial matter, with the strictest adherence to the technical wording, from and into English, German, Spanish and French, for manufacturers, patentees and others, and begs to be recommended to the iron masters and trade in that capacity.

C. KIRCHHOFF, Box 2806, Post Office, Cincinnati, O.
Latest Publications translated by C. Kirchhoff: "German Imperial Consular Instructions," "Cuba may become Independent," Officially endorsed by the governments of Germany and Spain.

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DEAR SIR: Your cards of discounts have proved of inestimable convenience.

GREEN & HERRON, Dayton, O.

GENTLEMEN: We find your discount lists very useful and convenient.

WARD, HUMPHREYS & DODGE, Concord, N. H.

Lyceums, Lecture Committees and Literary Associations wishing to arrange with the editor of *The Iron Age*,

MR. JAMES C. BAYLES,

for the delivery of either of his popular lectures, are invited to communicate with or address him at No. 10 Warren St., New York.

Mr. Bayles's lectures for the season of 1873-4, are:

A Ton of Coal.

A lecture presenting in popular and entertaining form the results of some of the latest, most thorough, and most interesting scientific researches in the departments of geology and physics, and aiming to be instructive without possessing the characteristics of a distinctly scientific lecture.

The Modern Handmaiden.

A humorous lecture, adapted to almost any occasion and audience. This lecture presents the "servant question" in its grotesque phases, and has been received with marked favor wherever delivered.

The Curiosities of Commercial Speculation.

A lecture of much popular interest, especially instructive and entertaining to those engaged in, or just entering upon, commercial pursuits.

The Land of Dreams.

A popular lecture on the philosophy and phenomena of sleep, full of historical fact and interesting anecdote.

Sir Philip Sydney: A Monograph.

A lecture especially suitable for delivery before historical and literary societies, being a highly finished essay on the life, character, writings and public services of Sir Philip Sydney, and presenting an interesting picture of court life in the days of Queen Elizabeth.

"ENGINEERING,"

A Weekly Illustrated Journal, edited by **W. H. MAW** and **JAMES DREDGE.**

OFFICES: 37 Bedford St., Strand, London, W. C.

52 Broadway, New York.

GEO. ED. HARDING, C. E.

Representative in United States.

This most successful English Engineering Journal, containing thirty-six pages, weekly, illustrating the latest advances in Civil, Mechanical, Mining and Military Engineering science, both in Europe and America, can now be obtained by American subscribers, post paid, for \$9.00, currency, per year, sent to the New York office of the Journal.

All the important details of the buildings and novel machinery at the great Vienna Exposition will be illustrated and described in *Engineering* the current year; and this, with illustrations of all the larger American engineering structures, will render it invaluable to every American Engineer, Architect, Iron Master and Machinist.

The best medium for advertising American Machinery to the attention of European capitalists.

Send for specimen copy, free.

NEW YORK, July 1, 1873.

THE ATTENTION OF MANUFACTURERS AND

business men is called to the natural advantages of Bristol, Bucks County, Pennsylvania, for a manufacturing site, situate on the River Delaware, with a river front of over one mile, navigable for vessels drawing 15 feet water, 18 miles from Philadelphia, on the line of the New Jersey Division, Pennsylvania Railroad, between Philadelphia and New York, and at the terminus of the Delaware Division of the Lehigh Canal, by which coal and iron are brought to our town cheaper than at any other point between New York and Philadelphia.

Bristol is noted as being a very healthy place, with cheap homes and low rents, good public and private schools, six churches of different denominations, and several manufacturing establishments already established. It contains a population of over 5000, and is constantly increasing in size and population.

Believing that Bristol possesses advantages that few other towns possess, and that the attention of manufacturers need only be diverted in this direction, the Burgess and Council have enacted the following ordinance, viz.:

Be it ordained and enacted, by the Burgess and Council of the borough of Bristol, and it is hereby ordained and enacted by the authority of the same, That all manufacturers which shall be erected within the borough of Bristol, during the period of ten years from and after the passage of this ordinance, shall for and during said period be exempted from the payment of borough tax.

Enacted on an ordinance at the Council Chamber, this fourteenth day of July, A. D. 1873.

CHARLES E. SCOTT, Burgess.

Attest: **J. WESLEY WRIGHT,** Clerk.

Bristol, Pa., July 21, 1873.

Special Notices.

MANAGER WANTED.

Wanted a competent person to manage the chipping, coaling and working of a charcoal furnace. One accustomed to working specular and magnetic ores preferred. References required. Address,

GEO. B. LOBBELL,
Pres. C. F. I. & S. Co., Wilmington, Del.

Wanted,

A young or middle aged active and energetic partner, with twenty to forty thousand dollars capital, in an old established and well paying wholesale business in a healthy Western city. Best of references given and required. Address, **H.,**

Office of The Iron Age,
10 Warren Street, N. Y.

A young man desires a situation as manager for a furnace company. Has eleven years experience in the business; best of reference given. Would prefer to go West.

Address **"IRON,"**
Allentown Lehigh Co., Pa.

STERLING

IRON & RAILWAY CO.

MAKERS OF

STERLING

ANTHRACITE PIG IRON

FOR FORGE AND FOUNDRY USE.

A. W. HUMPHREYS, Treas.,

42, PINE ST., N. Y.

MANUFACTURERS

desirous of introducing their goods to the British and Continental Markets, are advised to insert advertisements in the newspaper "IRON," published every Saturday, at 39 Cannon Street, London, E. C.

SCALE: First 3 lines, 3s.; every additional line, 10d. Price, 6d. per Copy, or 30s. per annum, inclusive of postage to the United States.

R. T. HAZELL, AUCTIONEER.

By R. T. Hazell & Co.,

Store No. 118 Chambers Street.

OUR REGULAR SALES OF HARDWARE, CUT LERY, FANCY GOODS, &c., will be held on TUESDAYS and FRIDAYS throughout the season.

CASH ADVANCES made on CONSIGNMENTS without additional charge.

For Sale.

Old Iron Afloat.

A superior lot of No. 1 Scrap for sale, to or from Havana.

Also, a lot of old Copper and Brass.

For particulars inquire of

H. H. GREGG & CO.,

108 Walnut Street, Philadelphia.

Trade Report.

Office of THE IRON AGE.
WEDNESDAY EVENING, Dec. 10, 1873.

The past week has been free from excitement in the financial markets, and has been chiefly characterized by a marked improvement in all classes of securities. This improvement is in a great degree attributable to the issue of new legal tenders by the Treasury. In the stock market a better feeling has been caused by the abandonment of the bankruptcy proceedings against the Grinnell estate, as contracts were involved to the amount of about \$13,000,000.

The money market has been easy, with 5 per cent. to 7 per cent., gold, as the extreme rates for call loans. Mercantile paper is fairly quotable at 9 @ 12 per cent. The news from London is favorable, the Bank of England discount rate having been reduced to 5 per cent., and rates outside of the bank having declined to 4 @ 4½. For several days past all fear of war with Spain over the Virginian affair has subsided, and as the indications are in favor of a peaceable compliance on the part of the Cubans with the orders from Madrid, we shall probably come out of the difficulty with the satisfaction of knowing that we have escaped the curse of war, without any material sacrifice of national pride. A war at this time would have been a most disastrous calamity to the country, and as the cause of the Virginian was, at best, a doubtful one, we do not think the business community have favored the idea of regarding her seizure and the murder of her passengers and crew as a *casus belli*. Notwithstanding the disturbing rumors, our local banks have been steadily gaining strength, and on the date of the last statement had about \$7,500,000 of legal tenders above the 25 per cent. requirement.

The gold market has been quite steady, considering the uncertainty attending the conclusion of our negotiations with Spain, and the fluctuations of the premium have been within comparatively narrow limits. The following shows the highest and lowest daily quotations:

Highest. Lowest.

Thursday.....109.....108½

Friday.....109.....109

Saturday.....109.....109

Sunday.....109.....109

Tuesday.....109.....109

Wednesday.....109.....109

There has been some speculative excitement on the Stock Exchange, and in some stocks the transactions have been of considerable magnitude. Prices have advanced, and the general tone of the market is strong, if not buoyant. The principal dealings have been in Western Union, Lake Shore, Union Pacific, Northwestern, Pacific Mail, St. Paul, Rock Island, Washash and N. Y. Central. We give below the highest and lowest of to-day's prices on 'change.

The market for government bonds has been strong. Southern State bonds have appreciated in value, and desirable railroad securities are recovering. We quote the closing prices of governments.

The following tables show the foreign trade movements for the week:

IMPORTS.

Tot. for week.....\$3,047,939.....\$3,948,566.....\$5,098,110

Prev. reported.....\$3,529,746.....\$3,673,480.....\$5,066,002

Since Jan. 1.....\$356,577,683.....\$400,317,046.....\$364,459,112

Included in the imports of general merchandise for the week are:

Quant. Value.

Anvils.....6.....\$149

Brass goods.....27.....6,099

Bismuth.....1.....660

Bronzes.....1.....1,942

Chains and anchors.....192.....13,183

Copper.....7.....7,469

Cutlery.....35.....24,468

Gems.....39.....7,838

Hardware.....40.....5,848

Iron pig, tons.....279.....11,327

Iron sheet, tons.....35.....3,150

R. R. bars.....4,880.....8,894

Iron cotton ties.....689.....2,474

Iron, other, tons.....1,891.....153,387

Lead, pigs.....10,174.....62,780

Lead, tons.....6.....535

Metal goods.....162.....23,373

Nails.....8.....2

Needles.....7.....5,213

Old metal.....6,764.....2,960

Plated ware.....2.....260

Per. caps.....7.....529

Saddlery.....13.....3,693

Steel.....954.....21,491

Spelter.....55,116.....8,353

Silverware.....13.....6,122

Tin, boxes.....11,102.....93,997

Tin, 2020 slabs.....263,448.....69,138

Wire.....380.....4,142

Zinc.....165,180.....11,140

EXPORTS, EXCLUSIVE OF SPECIE.

For the week.....\$3,947,436.....\$4,944,898.....\$5,170,064

Prev. reported.....\$1,742,987.....\$1,659,065.....\$1,719,045

Since Jan. 1.....\$223,690,423.....\$221,003,963.....\$292,349,109

Total for the week.....\$571,468

Previously reported.....46,040,628

Total since January 1.....\$46,612,096

Government bonds closed as follows:

U. S. 1881, reg.....114½.....114½

U. S. 1881, con.....111.....111

U. S. 5-20 1862, reg.....111.....111

U. S. 5-20 1862, con.....111.....111

U. S. 5-20 1864, con.....114½.....114½

U. S. 5-20 1865, con.....114½.....114½

U. S. 5-20 1866, con, Jan. and July.....117½.....117½

U. S. 5-20 1867, con.....117½.....117½

U. S. 5-20 1868, con.....117½.....117½

U. S. 10-40 reg.....111.....111

U. S. 10-40 con.....111.....111

U. S. Currency Pacific.....111.....111

New 5s, 1881.....110½.....110½

The following were the highest and lowest prices of stocks to-day:

Highest. Lowest.

N. Y. Cen. & Hudson Consolidated.....96.....96

Lake Shore.....77.....77

Rock Island.....98½.....98

Del., Lack. and West.....100½.....100

Wabash.....54½.....54

Western Union Telegraph.....74½.....74

Northwestern.....56½.....56

Northwestern, Preferred.....73½.....73

Milwaukee & St. Paul.....42½.....42

Milwaukee & St. Paul, Preferred.....64½.....64

Panama.....101.....98

Pacific Mail.....41.....38½

Erie.....45½.....45

Ohio & Mississippi.....31½.....31

Boston, Hartford & Erie.....9½.....9

Union Pacific.....31½.....31

C. & C. Ind. Central.....27½.....27

Hannibal & St. Joseph.....28½.....28

Hannibal & St. Joseph, Preferred.....37½.....37

Quicksilver.....28½.....28

Consolidation Coal.....49½.....49

Adams Express.....92.....92

American Merchants' Union Express.....59.....58½

GENERAL HARDWARE.

The chief interest in Hardware circles is now centered on the future. Of course, at this season there is little business doing, and stock-taking and settling up the business of the year is now in order. A good deal of curiosity, also, is manifested as to changes to be made at the beginning of the year. That there will be a good many is generally admitted, but they are not expected to be very radical.

We have been shown a new Shovel, which looks to us like an article of great promise. Its peculiarity is that it is made of one piece, without strap or rivets, being pressed into shape by machinery. It is claimed that it can be made lighter and stronger than others and has nothing about it for the dirt to adhere to. The handle is straight, and fits into a socket, giving it the same bend as the ordinary shovel. This article is patented, and it is intended to put it on the market about the middle of next month.

The Hart, Bliven & Mead Mfg. Co. have taken a lease for three years longer of the building they now occupy. The Wilson Mfg. Co. are preparing a new catalogue, with revised prices, which they will have ready about the middle of January.

Baeder, Adamson & Co. issued since our last, though dated the 1st instant, the following price list of Sand Paper, &c., which is a reduction of 25 cents per ream on Flint, and 50 cents on Emery Paper:

	Perram.
Flint Paper, No. 00 to 1½.....	\$4-25
" No. 2, 2½ and 3.....	4-75
Star Paper, all numbers.....	3-25
Emery Paper, No. 00 to 1½.....	7-50
" No. 2.....	6-50
" No. 3.....	9-50
" No. 3½.....	11-50
Emery Cloth, No. 00 to 1½.....	30-00
" No. 2.....	22-00
" No. 3.....	17-00
" No. 3½.....	28-00
Roll Extra Flint Paper in 50 yard roll. Per yard.....	9c
" No. 00 to 1½.....	10c
" No. 2.....	11c
" No. 3.....	12c

Agreeable to a notice issued by the President and Secretary of the National Association of Saw Manufacturers of the United States, a convention of the representatives of this industry assembled at the Kennard House, Cleveland, Ohio, on Wednesday and Thursday of last week. It is a matter of regret among the friends of the association that a quorum could not be obtained. The meeting was adjourned on the 4th instant without transacting any of the business for which it was convened. The following is the substance of a resolution presented by the executive committee: Owing to some members of the association having broken the prices agreed upon at their last meeting, it is no longer possible to sustain the net prices then established. It is, however, recommended that the trade continue to use the uniform list, the net price or discount to be optional with each manufacturer. It was also recommended that the organization be continued for the interchange of views, etc., as may be to the interest of the trade in the future. Our readers will remember that at the inaugural meeting of the association in March last the price of Hand Saws was not touched; the Saws affected by the combination were Circular and Top Saws, Shingle, Veneer, Mill, Mulay, Gang, Drag, Cross Cut and Pit Saws and Fay's Scroll Webs.

The manufacturers of Cordage reduced the price of Manila, Sisal and New Zealand Rope half a cent per lb. on the 9th instant. The following is the revised list:

Manila Cordage, sizes above 12 th'd.....	cts.
" 5-16 in diam. 6 th'd and 9 th'd (¾ in. and 1 in.).....	18
Manila Cordage, 12 th'd (¾ in. diam.).....	17½
" Hay Rope.....	17
Cordage, bolt rope yarns.....	16
Manila Cordage, bolt rope yarns, 6 th'd and 9 th'd.....	20
Tar'd Manila.....	16½
Fine Tar'd Manila Lath Yarn.....	18
Sisal Rope, sizes above 12 th'd.....	18
" 6 th'd and 9 th'd.....	16
" 12 th'd and Hay Rope.....	15½
New Zealand Cordage, sizes above 12 th'd.....	15
New Zealand Cordage, 6 th'd and 9 th'd (¾ in. and 1 in.).....	16
New Zealand Cordage, 12 th'd (¾ in. diam.) and Hay Rope.....	15½

On the 4th instant the manufacturers of Copper reduced the price of Sheathing, Braziers' Copper, Bolts, &c., 5 cents per lb. The revised list is given below:

SHEATHING, BRAZIER'S COPPER, BOLTS, &c.

Braziers' Copper, ordinary sizes, over 16 oz. per square foot..... 38c |

Braziers' Copper, ordinary sizes, 16 oz. and over 12 oz. per square foot..... 38c |

Braziers' Copper, 12 oz. per square foot and lighter..... 41c |

Circles, less than 84 inches in diameter and over 41c..... 41c |

Circles, 84 inches in diameter and over..... 41c |

Segment and Pattern sheets..... 41c |

Locomotive Fire Box sheets..... 38c |

Sheathing Copper, over 12 oz. per square foot..... 38c |

" 12 oz. per sq. foot and lighter..... 41c |

Bolt Copper..... 35c |

No Copper is Sheathing except 14x18 inches, and not to exceed 34 oz. to the square foot.

The Ansonia Brass & Copper Company have issued the following list for O'Neil's Patent Planished Copper, which is a reduction of five cents a pound on former prices:

O'NEIL'S PATENT PLANISHED COPPER.

Per lb.

14 and 16 oz. and heavier.....39c. By the case, 39c.

12 oz. and lighter.....42c. " " 41c.

Bolter Sizes.

7 inch, 14x52. 8 inch, 14x56. 9 inch, 14x60. Per lb.

14 and 16 oz. and heavier.....41c. By the case, 40c.

(And all sizes over 30 inches wide.)

30x60. Per lb.

14 and 16 oz. and heavier.....42c.

12 oz. and lighter.....46c.

Planished Brass, two cents per pound less than Planished Copper.

There is no change to note in quotations of Foreign Hardware. With few exceptions prices are fully sustained. Mail advices from Birmingham, received in this city to-day, report a stiff market for Chains and heavy goods generally. 6½-10-2 Traces are quoted at 1/5, which is a half-penny advance on previous figures. Prices here, in the absence of demand, are unchanged, and we continue to quote 6½-10-2 Traces at 62 cents, 7-10-2 at 67 cents per pair, and ¾ inch Coil Chain 8½ cents per lb., all gold. German

Halter and Coil Chain is generally quoted at discount 25 @ 30 per cent. from list, but an actual buyer would have little difficulty in obtaining a concession from the last named figure for a fair order. We quote Peter Wright's Anvils at 12 cents, gold, for sizes under 250 lbs, and Armitage's Mouse Hole Anvils, 11 cents, gold.

As is usual at this season, the demand for Nails is light, and although the price at which these goods are offered is extremely low, the market is void of any speculative inquiry. Since our last issue the card rate has been changed to \$4-50 for 10d., but the asking price for large or small lots is \$4-25, and this figure could be shaded without difficulty for a fair order.

There is no improvement to report in the demand for House-Furnishing goods. Stamped and Re-tinned goods are quoted at discount 25 per cent., but a large buyer could obtain a concession from this figure. The recent stiffening of the market for Tin Plates has had its effect on Tinware generally, and manufacturers are not as anxious to dispose of staple goods at about the cost of manufacture as they were a few weeks since.

H. Chapin's Sons, Pine Meadow, Conn., have in press, and will soon issue, their new illustrated catalogue for 1874. As some changes have been made in list numbers, prices, &c., the list of 1870 and appendix of 1872 will be made void, and the trade are requested to use the new list in all cases. The following are the discounts from the new catalogue, to take effect January 1st, 1874:

	Dis. per cent.
Awl Handles.....	40
Boxwood Rules.....	60
Bench Planes, Common, Peares.....	30
" Extra.....	20
" Premium.....	20
" Sets in cases.....	20
" Razee.....	20
Boring Machines.....	30
Bench Screws.....	20
Coppers' Planes.....	30
Clamp Head Screws.....	30
Chisel Handles.....	40
Door Stops.....	50
File Handles.....	40
Gauges.....	40
" Scholl's Patent.....	40
" Butler's Patent.....	40
Hand Screws.....	30
" Bead.....	30
" Round.....	30
Ivory Rules.....	50
Iron Planes.....	30
Levels.....	60
Level Glasses.....	60
Miscellaneous Rules.....	60
Planer.....	30
Moulding Planes.....	20
Plows, Grooving.....	30
Plumbe and Levels.....	30
Pocket Levels.....	60
Plane Handles.....	40
Plane Irons.....	30
Ship Planes.....	30
Ship Handles.....	40
Stops.....	20
Screw Drivers.....	30
Sliding T Bevels, No. 1.....	30
" No. 2.....	30
Try Squares, Premium.....	30
" No. 1.....	30
" No. 2.....	30
Turning Saw Frames.....	30
Toy Tool Chest Supplies.....	10

In addition to the above mentioned discounts, an extra discount of 10 per cent. for cash, if received within thirty days from date of invoice, will be allowed.

We are authorized by the Ausable Horse Nail Company to state that there will be no reduction in the price of their goods on January 1st, 1874. They report a marked improvement in the demand.

E. M. Boynton, manufacturer of Patent Lightning Saws, has made the following changes in his list. The list for One Man Cross Cuts is reduced from \$1-25 to \$1 per foot. The list for Lightning Cross Cuts is now \$1 per foot for all lengths. Drag Saws are \$1-50 per foot list, instead of \$2 as formerly. The discount, viz., 30 per cent., remains as before.

IRON.

American Pig.—During the past two weeks there have been sales estimated as high as 40,000 tons, but the last three or four days have been very quiet. We believe it is pretty safe to say that all the saleable Iron on the Lehigh has been sold, and the bulk of the purchases have been made by consumers who have the means to avail themselves of the low prices of offering for cash. Most of the Iron sold lately has been for cash, and the Iron companies have been greatly strengthened thereby, and their views are therefore higher, though there are still weak holders. No. 2 Foundry has been largely taken by the pipe makers, to whom the low price of Iron brought orders, and they of course bought to cover their contracts. This grade of Iron is therefore scarce. There is little No. 1 Foundry left on makers' hands. A person who is well informed estimates that the production of Pig Iron in this country will be 600,000 tons less in the year beginning last October than in the year preceding, for the reason that half the furnaces in the country are out of blast, and it will take two months at least to get them in blast again. In the present state of the market it is impossible to quote prices, definitely. Many of the companies are quoting \$35 for No. 1 Foundry, while it is known that others would accept \$32, or, probably, less. We therefore quote \$32 @ \$35. Some makers are very firm on No. 2 Foundry, which we quote \$30 @ \$33. Gray Forge is held at \$26 @ \$27 at works.

Scotch Pig.—There is very little Scotch Iron here, and but little demand for it, the difference in price between it and American No. 1 being too great to encourage its use. We quote without change: Glengarnock, \$42; Gartherric, \$48; Coltness, \$45 @ \$46. There is no Eglinton here. In the absence of sales these prices may be considered altogether nominal. Liverpool letters dated the 27th and 29th ult. report that Coals in London had declined 7½ within the month, and there seemed to be a prospect of a gradual decline, in which case Iron must fall, although there might be a struggle to maintain the price. The number of furnaces in blast in Scotland this year is 122, against 137 last year. The quantity of Scotch Iron in store on the 26th ult. was 35,371 tons, against 129,841 in 1872. The difference is, in part at least, explained by the makers keeping Iron on the furnace banks, when they formerly sent it into store to raise money; but now that they are rich and able to hold, there is not so much Iron going into store.

Following are the prices of Scotch Pig Iron in Glasgow, as reported by Messrs. J. E. SWAN & BROS., under date of Nov. 21:

	No. 1	No. 2	No. 4
Gartherric.....	117/6	110/	110/
Coltness.....	120/	111/	112/6
Summerlee.....	115/	108/	112/6
Longloan.....	118/	110/	110/
Govan.....	108/6	107/	112/6
Calder.....	115/	107/6	110/
Shotts, Bessmer.....	125/	150/	110/
Ordinary.....	115/	110/	110/
Camrose.....	115/	110/	112/6
Wishaw.....	110/	107/6	110/
Monkland.....	108/6	107/	110/
Chapelhall.....	115/	107/	110/
Clyde.....	108/6	107/	110/
Quarter-Clyde.....	108/6	107/	110/
Glasgow Warrants 3-5, No. 1; 2-5, No. 2, g. m. b. 106/3.		</	

The increase in the supply of anthracite coal from the different regions up to Dec. 1, 1873, over 1872, is as follows:

Schuykill	125,349
Lehigh	31,641
Wyoming	194,416
Shamokin	57,344
Lykens Valley	4,825

A portion of the increase, viz the Lehigh, is from the Wyoming region, which, if deducted and added to the increase from the Wyoming, would give a very fair proportionate increase from the three principal coal regions so far this year.

The following dispatch, received yesterday, is of interest:

POTTSVILLE, Penn., Dec. 8.—The railroad strike continues, though there is very little change in the situation. At Tanamunga it is said the operatives are about resuming, and it is probable the strike will end in a few days. The effect upon the coal trade will not be very serious, even should it continue, as there is a large stock of coal on hand.

PHILADELPHIA.

PHILADELPHIA, Dec. 9, 1873.

The market continues moderately active, without very material change since my last, but with a decided upward tendency in prices. The volume of business has, however, been larger, and the inquiry more general for all grades of Pig Metal. The furnace companies are firm and decided in their views, and with scarcely an exception, decline to name prices for 1874 deliveries, or to contract for iron ahead at anything like present prices. The impression prevails here that a fairly active trade will open early in January at about \$36 No. 1 Foundry as a basis for the season's transactions.

In Manufactured Iron there is little doing, but decidedly more inquiry from car and other works in the interior, some of whom are anxious to place specifications for large orders at 2-7 cts. to 2-8 cts. per lb. The mills, however, refuse less than 3 cts., and in some instances ask 3-4 cts., which latter rate is the selling price from store. The puddlers at the Catawissa Manufacturing Co.'s Works still remain out, and have lately refused the offer of \$5-25 per ton, demanding Philadelphia rates, which, with helper's allowance, are now \$5-25. This is the largest Bar Iron mill east of the Alleghenies, with a production of over 20,000 tons annually; and in view of the small stocks of Finished Iron at most other works, a prolonged stoppage there must make demand elsewhere.

Rails.—There have been no transactions to note, but more inquiry and some contracts pending.

Old Rails are scarce in this market, but there is next to no demand for them at prices asked, which range from \$37 to \$38.

Scrap is also scarce for prime No. 1 Wrought, and Piling Scrap is more sought for, holders of the small lots here asking \$35 to \$36, prompt cash.

The sales to note include the following: 2500 tons Lehigh Gray Forge at \$37, on cars at furnace; 2000 tons Schuylkill Gray Forge, on private terms; 3000 tons No. 1 Lehigh Foundry at \$33, here; 1000 tons No. 2 Schuylkill Foundry at \$33, here; 1000 tons No. 2 Schuylkill Foundry at \$33, here; 500 tons No. 1 Lehigh Foundry at \$34, Hoboken, 60 days and interest; 1000 tons, one-half each No. 1 and 2 Lehigh Foundry, equal to \$32-50 and \$30-50, at furnace.

The following prices are a fair quotation of the market:

Pig Iron—No. 1 Foundry, \$34 to \$35, the latter asked for choice Lehigh brands; No. 2, \$31 to \$32. GRAY FORGE, \$26 to \$27, at furnace. WHITE AND MOTTLED, \$24 to \$25.

BAR, 3c to 3-4c.

RAILS—Prices nominal at \$65 to \$68.

OLD RAILS—No demand, \$37 to \$38 asking.

SCRAP—No. 1 Wrought, best Piling Scrap, \$35 to \$36.

[Latest by Telegraph.]

PHILADELPHIA, Dec. 10.—The following additional sales are reported: 1000 tons Schuylkill Forge; 500 tons Schuylkill Mottled, at \$24; 1500 Schuylkill No. 2 Foundry, at \$25 at furnace. Actual sales of Pig Metal in last 14 days foot up to nearly 40,000 tons.

PITTSBURGH.

PITTSBURGH, Dec. 6, 1873.—There is a much better feeling, both in manufacturing and commercial circles, although business always slackens off at this particular time, and no material improvement can reasonably be expected now until after the close of the year and yearly settlements are closed up. The dark clouds that have been hanging over us for some time past seem to be breaking up, and it is hoped will soon disappear. During the week there has been but a single suspension—the Mechanics' Savings Bank—a small concern, and its managers claim, if a little time is allowed, that they will be able to meet all their obligations. Ira B. May & Co., suspended bankers, have filed a petition for voluntary bankruptcy. They had arranged with the majority of their creditors, who granted them an extension to resume business again, but some of the small claimants refused to comply with the arrangement, in hopes that by so doing they would get their claims satisfied at once, in order to get them out of the way. Hence, under these circumstances, it was deemed best to take the course in question. There was a meeting of the creditors of S. McLean & Co., another suspended banking firm, the other day, at which McLean submitted a statement of his assets and liabilities, which, on paper, showed a surplus of some \$40,000. It was agreed not to interfere with the assignee who has the matter in hand. The National Trust Company has gone into the hands of a receiver, and measures have been taken by the bank for F. J. Grier, the late cashier, into bankruptcy. The stockholders of this concern are individually liable, and the indications at this writing are that they will have to make up a deficit of from \$30,000 to \$50,000. Finney, the defaulting secretary of the Eureka and Boatmen's Insurance Company, has taken his departure, being apprehensive, it is supposed, of prosecution. At a meeting of the stockholders of the Eureka, it was resolved to wind up its affairs and dissolve. It is understood that the stockholders will realize only about 20 cents per share after making up the deficit. The other company, the Boatman's, also had a meeting of its stockholders this week, at which it was decided to make up the deficit and continue business. It is reported (four correspondents cannot vouch for its correctness) that the Cascade and Escanaba Iron Companies either have, or are likely to get, an extension, which, I hope, is true, as there are some good men in them, and, besides, there are other important interests, the

welfare of which hinge on the action of the creditors of these two companies. The Pig Iron trade has been more active this week, at least there were more sales reported than for some time past, and, as a consequence, there is a firmer feeling, although prices are still uneven and irregular, and the commodity merchants report that buyers and sellers generally are wide apart in their views. There have been a number of sales of good Gray Forge Mill Iron within the past week or two, at \$35 to \$36, cash, and \$27 to \$28, 4 mos. It is said that there are now a good many buyers at \$25, cash, and but few sellers. Producers allege that the figure in question does not cover the cost of making it by from \$3 to \$5 per ton; hence it is only those, and a rule, who are pressed for money that are selling at prevailing rates, and the general sentiment just now appears to be that choice Mill Iron at \$25, cash, are good property, and this accounts for the fact that there are now but few sellers at this figure. Foundry Iron continues dull, and no improvement is expected until after the close of the year. Prices may be quoted nominally at \$30 to \$32, 4 mos., according to quality. The market for finished Iron continues quiet, and in a general way presents but little that is really new or important. Orders are slackening off, as they nearly always do at this particular time, while prices remain unchanged. Nails continue dull, and at a meeting of the association, on Tuesday last, it was agreed to reduce the price of the standard size of nails, and to bring the selling price down to \$1, usual rate. Our Steel manufacturers report trade dull, although none of the mills have shut down as yet; prices are weak, and in some instances, concessions are being made. The demand for Tools continues meagre, and it is intimated that while the car remains unchanged, there has been some pretty sharp cutting going on of late. The works of Klossman, Park & Co. have been stopped for a week or two, but it is expected that they will start up again within the next few days. The Window Glass trade continues quiet, as it always is at this season of the year; none of the factories have started up as yet, and it is difficult at this writing to say when they will start. Factors are determined not to resume until the men are willing to go to work at the reduced rate, and the latter do not seem to be prepared for that as yet.

The Pittsburgh Commercial of Dec. 6, says: There has been considerable inquiry for pig iron during the past week, and we hear of a good many transactions mostly at low figures for cash. Even such firms as are selling at \$25 per ton for cash, are holding at \$27 to \$30 per ton, 4 months. Consequently a large part of the sale reported are for prompt cash, and consumers who wish to buy on time are unwilling to purchase while the difference between cash and time price remains at \$3 to \$5 per ton. In addition to the sales reported, we have heard of several others, but believe them to be for prompt cash, and include them in our report. We are reported the following:

BITUMINOUS COAL SMELTED FROM LAKE SUPERIOR	
ORE	
500 tons Gray Forge red short	\$25-00-cash
300 tons Gray Forge red short	25-00-cash
300 tons Gray Forge red short	25-00-cash
300 tons Gray Forge red short	25-00-cash
100 tons Gray Forge neutral	25-00-cash
100 tons Gray Forge neutral	25-00-cash
100 tons Gray Forge neutral	25-00-cash
100 tons mottled red short	25-00-4 mos.
300 tons Gray Forge neutral	25-00-4 mos.
50 tons Gray Forge neutral	25-00-4 mos.
50 tons Gray Forge red short	25-00-4 mos.
50 tons Gray Forge red short	25-00-4 mos.
10 tons Foundry	30-00-4 mos.
10 tons No. 2 Foundry	30-00-4 mos.
10 tons No. 1 Foundry	30-00-4 mos.
30 tons mottled red short	25-00-4 mos.
50 tons No. 3 red short	30-00-4 mos.
10 tons No. 1 Foundry	30-00-4 mos.

ANTHRACITE	
100 tons No. 3 cold short	\$26-00-4 mos.
30 tons No. 1 Foundry	30-00-4 mos.
30 tons mottled red short	25-00-4 mos.
50 tons No. 3 red short	30-00-4 mos.
10 tons No. 1 Foundry	30-00-4 mos.

EASTERN CHARCOAL	
20 tons cold blast	\$50-00-4 mos.
30 tons cold blast	48-00-4 mos.

BOSTON.

BOSTON, Dec. 6, 1873.—The demand for refined Bar Iron light, and prices irregular, American English Bar Iron is selling at \$75 to \$78 per ton for the ordinary sizes, and \$80 to \$85 for extra sizes, according to size. Cast Steel is selling at 10c for English, gold, 10c, currency, and 14c to 16c for American, currency, with a fancy premium. Galvanized Sheet Iron is steady and quiet at unchanged prices. We quote No. 20 at 11c; No. 21 at 12c; No. 22 at 13c; No. 23 at 14c; No. 24 at 15c; No. 25 at 16c; No. 26 at 17c; No. 27 at 18c; No. 28 at 19c; No. 29 at 20c; No. 30 at 21c; No. 31 at 22c; No. 32 at 23c; No. 33 at 24c; No. 34 at 25c; No. 35 at 26c; No. 36 at 27c; No. 37 at 28c; No. 38 at 29c; No. 39 at 30c; No. 40 at 31c; No. 41 at 32c; No. 42 at 33c; No. 43 at 34c; No. 44 at 35c; No. 45 at 36c; No. 46 at 37c; No. 47 at 38c; No. 48 at 39c; No. 49 at 40c; No. 50 at 41c; No. 51 at 42c; No. 52 at 43c; No. 53 at 44c; No. 54 at 45c; No. 55 at 46c; No. 56 at 47c; No. 57 at 48c; No. 58 at 49c; No. 59 at 50c; No. 60 at 51c; No. 61 at 52c; No. 62 at 53c; No. 63 at 54c; No. 64 at 55c; No. 65 at 56c; No. 66 at 57c; No. 67 at 58c; No. 68 at 59c; No. 69 at 60c; No. 70 at 61c; No. 71 at 62c; No. 72 at 63c; No. 73 at 64c; No. 74 at 65c; No. 75 at 66c; No. 76 at 67c; No. 77 at 68c; No. 78 at 69c; No. 79 at 70c; No. 80 at 71c; No. 81 at 72c; No. 82 at 73c; No. 83 at 74c; No. 84 at 75c; No. 85 at 76c; No. 86 at 77c; No. 87 at 78c; No. 88 at 79c; No. 89 at 80c; No. 90 at 81c; No. 91 at 82c; No. 92 at 83c; No. 93 at 84c; No. 94 at 85c; No. 95 at 86c; No. 96 at 87c; No. 97 at 88c; No. 98 at 89c; No. 99 at 90c; No. 100 at 91c; No. 101 at 92c; No. 102 at 93c; No. 103 at 94c; No. 104 at 95c; No. 105 at 96c; No. 106 at 97c; No. 107 at 98c; No. 108 at 99c; No. 109 at 100c; No. 110 at 101c; No. 111 at 102c; No. 112 at 103c; No. 113 at 104c; No. 114 at 105c; No. 115 at 106c; No. 116 at 107c; No. 117 at 108c; No. 118 at 109c; No. 119 at 110c; No. 120 at 111c; No. 121 at 112c; No. 122 at 113c; No. 123 at 114c; No. 124 at 115c; No. 125 at 116c; No. 126 at 117c; No. 127 at 118c; No. 128 at 119c; No. 129 at 120c; No. 130 at 121c; No. 131 at 122c; No. 132 at 123c; No. 133 at 124c; No. 134 at 125c; No. 135 at 126c; No. 136 at 127c; No. 137 at 128c; No. 138 at 129c; No. 139 at 130c; No. 140 at 131c; No. 141 at 132c; No. 142 at 133c; No. 143 at 134c; No. 144 at 135c; No. 145 at 136c; No. 146 at 137c; No. 147 at 138c; 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15,823 tons, of the value of £312,863, against 19,661 tons, of the value of £375,680, in October last year.

Unwrought copper exported during the month was less by about 7600 tons; and wrought, less by 1600 tons. The value of unwrought copper was less this month by £32,075 than it was in the corresponding period last year. On the 10 months' transactions there is also a considerable falling off.

Brass exports were higher by 1581 tons, and the excess in value this October over last amounted to \$16,961. In the 10 months the increase was nearly 6000 tons, and the increased value about \$60,000.

In steam engines and machinery there has been a decrease on the month's, but a slight increase on the 10 months' trading. The value of the steam engines exported last month was £250,651, against £297,160 in the like month last year. In other descriptions of machinery the value of exports last month was \$376,515, as compared with \$385,468 in October last year. For the 10 months, however, there has been an increase from \$4,473,361 to \$5,350,470.

The increase in railway passenger carriages is considerable, that on the month amounting to £14,333, the augmented value of the 10 months' trading being £94,101. But to counterbalance the increase there is a falling off in the profits on railway trucks. The decrease on the month's trading is £22,694, but that on the longer period only £4594.

Iron gives statistics showing the weekly shipments of iron during this and the two preceding years, thus:

Week ending.	1873.	1872.	1871.
Jan. 4.	5,701	10,016	7,865
" 11.	11,088	8,887	8,533
" 18.	9,386	13,070	7,659
" 25.	11,303	10,370	9,940
Feb. 1.	10,370	19,300	10,851
" 8.	18,537	12,078	7,787
" 15.	8,000	14,388	8,082
" 22.	12,312	16,961	8,698
Mar. 1.	12,144	12,494	13,460
" 8.	12,494	14,596	13,644
" 15.	14,596	13,039	16,440
" 22.	13,039	11,167	19,011
Apr. 5.	15,476	16,343	17,665
" 12.	20,150	20,581	18,019
" 19.	16,128	25,096	17,680
" 26.	12,996	23,117	18,468
May 3.	9,102	26,806	17,518
" 10.	14,090	26,978	21,766
" 17.	17,493	23,560	22,830
" 24.	17,173	18,806	30,400
June 7.	16,880	23,190	16,103
" 14.	14,309	30,153	16,101
" 21.	13,127	21,330	15,881
" 28.	12,287	19,904	19,876
July 5.	12,107	16,599	17,830
" 12.	11,690	19,221	17,127
" 19.	11,280	20,254	23,530
" 26.	9,865	19,108	19,101
Aug. 2.	11,064	20,561	17,663
" 9.	10,157	14,494	15,597
" 16.	8,066	17,341	20,210
" 23.	10,717	15,532	19,422
" 30.	10,018	14,314	13,582
Sept. 6.	12,309	17,436	19,874
" 13.	10,629	15,799	14,685
" 20.	11,477	14,129	21,455
" 27.	12,018	14,014	16,173
Oct. 4.	12,073	13,707	20,862
" 11.	11,805	12,071	16,379
" 18.	15,492	12,351	17,968
" 25.	12,650	12,308	21,502
Nov. 1.	11,438	13,916	19,900
" 8.	12,528	12,960	18,348
Total.	531,894	766,156	765,520

Metals are quiet. Messrs. VonDadelzen & North, in their weekly report, say that Copper has declined. Late on Friday last the lowest point was touched, viz., \$79 for Chili bars, and \$20 for Wallaroo. On Saturday there was nothing done, but during the last few days there has been a better feeling, and fully 2000 tons of various kinds changed hands. Chili bars firm, \$20 to \$22, cash, and \$22, 10% to \$24, two and three months. Wallaroo, \$20 to \$22, cash, and \$21 to \$24, three months, closing with buyers. English quiet, but unchanged in value. The charters for the first fortnight of October were telegraphed last Tuesday as 1800 tons. Stock on the coast given as 5300 tons. Tin has undergone a serious decline, caused by the reduction of \$4 in the standard of ores, late last week, coupled with pressing sales on the part of old holders. Straits has given way to \$116 to \$117, cash spot, and for forward delivery \$115. A sale for arrival was made as low as \$114; and a sale of 1000 slabs Billiton, to arrive, reported at \$111. In Holland, also, the market has been dull. Banca, spot 70 1/2, and ex spring sales 68 1/2, to 69 1/2; Billiton, 67 1/2; English dull, \$120 to \$122. Tin-plates very dull, and difficult to quote near prices. Lead has maintained its value well, \$24 to \$24 1/2. Spelter: Nothing officially reported, but if sales were pressed lower prices would have to be accepted. We quote Silesian \$26 10/100. Quicksilver, \$31 nominally. P. S.—Scotch pig-iron closes 109; Chili bars, \$28 10/100; Wallaroo, \$24.

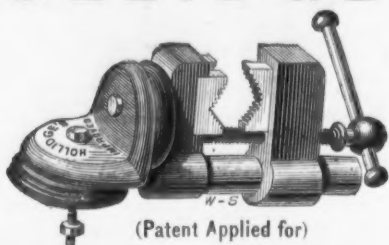
London Metal Market.

(From The Mining Journal.)

Copper—V ton.	£.	s.	d.	£.	s.	d.
Best Selected.	94	0	0	92	0	0
Tough Cake & Tile.	95	0	0	92	0	0
Sheathing and Sheet.	95	0	0	92	0	0
Bolts.	104	0	0	103	0	0
Bottoms.	104	0	0	103	0	0
Old.	92	0	0	91	0	0
Burra Burra.	90	10	0	91	10	0
Wire.	0	1	0	0	1	0
Tubes.	0	1	0	0	1	0
Brass—V ton.	0	0	0	0	0	0
Sheets.	0	0	10 1/2	0	0	11
Wire.	0	0	10 1/2	0	0	11 1/2
Tubes.	0	0	11 1/2	0	0	11 1/2
Yellow Metal Sheathing.	0	0	9 1/2	0	0	9 1/2
Spelter—V ton.	0	0	0	0	0	0
Foreign on the spot.	27	10	0	28	0	0
to arrive.	0	0	0	0	0	0
Zinc—V ton.	0	0	0	0	0	0
In Sheets.	35	0	0	35	10	0
Quicksilver—V bottle.	30	0	0	31	0	0
Tin—V ton.	0	0	0	0	0	0
English Blocks.	122	0	0	121	0	0
Ditto Bars (in bales).	122	0	0	121	0	0
Ditto Refined.	124	0	0	118	0	0
Banca.	117	0	0	118	0	0
Straits.	115	10	0	117	0	0
* Tin Plates—V box.	0	0	0	0	0	0
IC Charcoal.	1 qual.	1	18	0	1	18
IX "	1 qual.	2	2	0	1	18
IC "	2 qual.	1	14	0	1	18
IX "	2 qual.	2	0	0	2	0
IC Coke.	1	8	0	0	1	10
IX "	1	14	0	0	1	18
Canada Plates.	V ton.	21	0	0	21	10
at works.	20	0	0	21	0	0
Iron—V ton.	0	0	0	0	0	0
Bars Welsh, in London.	12	5	0	—	—	—
to arrive.	12	0	0	—	—	—
Nail Rods.	12	0	0	18	0	0
Nail Rods, Start'd in L'ndon	12	0	0	14	0	0
Bars.	12	0	0	14	0	0
Hoops.	14	0	0	14	0	0
Bars at Works.	12	0	0	14	0	0
Hoops ditto.	12	0	0	15	0	0
Sheets, single.	15	0	0	15	0	0
Pig. No. 1, in Wales.	5	0	0	6	10	0
Refined metal ditto.	7	0	0	8	0	0
Bars, common ditto.	11	0	0	11	10	0
Do, merchant, Tyne or Tees	11	0	0	11	10	0
Ditto, Railway, in Wales.	10	0	0	11	0	0
Ditto, Swedish, in London.	19	0	0	19	15	0
To arrive.	30	0	0	21	0	0
Pig. No. 1, in Clyde.	5	0	0	7	0	0
Ditto, L.O.B., Tyne or Tees.	4	10	0	5	10	0
Ditto, Nos. 2 & 4, L.O.B.	5	0	0	6	0	0
Railway Chairs.	5	0	0	6	0	0
Spikes.	12	0	0	14	0	0
Indian Ch' Coal Pig in L'ndon	10	0	0	13	0	0
Steel—V ton.	0	0	0	0	0	0
Swedish, in bales (rolled).	21	0	0	—	—	—
Ditto, in fagots.	24	0	0	25	0	0
English, spring.	34	0	0	—	—	—
Lead—V ton.	0	0	0	0	0	0
English Pig, common.	34	0	0	—	—	—
Ditto, L.B.	34	0	0	—	—	—
Ditto, W.B.	34	0	0	—	—	—
Ditto, Sheet.	34	0	0	25	0	0
Ditto, Red Lead.	25	10	0	—	—	—
Ditto, White.	30	0	0	32	0	0
Ditto, Patent Shot.	37	5	0	—	—	—
Spash.	25	15	0	—	—	—

At the works, 10 to 15, per box less. Terms plates 2s. per box below tin plates of similar brand. † Nominal. ‡ Add 6s. for each X.

HOLLIDGE'S



(Patent Applied for)

IMPROVED PIPE VISE.

I Claim for this Vise the following advantages over all others:

- FIRST.—Pipe can be held at any angle while being operated upon.
 - SECOND.—Pipe can be inserted side-wise with Ells or Fittings of any kind on each end, thus enabling the workman to take apart old and crooked Pipe without any trouble, and saving about one-half the room required to work other Vises.
 - THIRD.—It can be fastened in the middle of the work-bench and in this way allow the Pipe to rest on it, while all other Vises have to be screwed to the end of the bench or to a post in the floor so as to permit the stocks or cutter to pass clear.
- The Vise is made very strong and durable, and the working parts arranged so as to present the greatest strength and resistance to wear.
- The above is a fair representation of the Vise.

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The parts are held together by turning the edge of the zinc like a hem around the under side. They are equally desirable for Parlor or Cooking Stoves, are very compact to ship, are as cheap as plain zinc, when their durability is considered, and are the most appropriate article in market for their purpose.

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We have made arrangements to furnish Koenig's PATENT BINDERS, which we think altogether the best before the public, to our subscribers at the following very low rates—about the wholesale prices by the dozen.

Half Cloth.....\$1.00 each.
(Cloth Back and Corners, with Morocco Paper Sides—a good, serviceable Binder.)
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THE NICHOLSON FILE.

All *Nicholson Files* are cut with the Patent *Increment Cut*, an invention owned and controlled exclusively by us, the file cut in this manner being Patented as a new article of manufacture, and differs from all other machine cut files (all of which have their teeth cut with equal spaces) by being cut with teeth slightly *expanding or increasing in size and space from the point*, thus avoiding the too great regularity of teeth common to all other machine cut files. The tendency of all cutting tools with teeth or cutters placed at regular distances from each other may be illustrated (to the machinist at least) by the fluted reamer—as it is well known that if a round reamer be made with (say 12) teeth whose spaces are equidistant, the hole reamed will *not* be round and smooth, but will approximate to a hexagon in shape. Whereas, if the same number of teeth be made of irregular distances, the hole reamed will be both round and smooth. The same is true of a file, hence the necessity of its having teeth at unequal distances, and to which we have applied the name of *Increment Cut File*, which possesses all the advantages of hand cut work, and the accuracy and uniformity of machine work. It is now upwards of seven years since this File was introduced to the public, and the demand has increased until our production is undoubtedly treble that of any File manufactory in the country.

We put all files under seven inches in boxes of either one-half or one dozen each. These boxes are neatly arranged, and open on the end, on which the kind is plainly marked with printed labels, acknowledged improvements on the old methods.

The "*Increment File*" is not an experiment, but an established fact, and already has acquired a legitimate demand for upwards of 500 dozen per day. We employ no *regular Travelers*, but our goods may now be found in the hands of the principal jobbers and dealers throughout the country.

Prices and terms will be forwarded on application to

NICHOLSON FILE COMPANY,
Providence, R. I.

CAUTION.

It has just come to our knowledge that certain parties in the West are engaged in buying up **WORN OUT FILES** of our manufacture, and, after immersing them in an acid bath, selling the same in packages which have a label of the same color and general appearance as ours, and falsely stating as follows:

NICHOLSON FILES,

Providence, R. I.

Increment Cut.

Made from Best English Steel. &c.

Our friends and the public are cautioned against this deception, which we consider one of a most injurious character, not only to ourselves, but to all dealers and consumers who desire the

"NICHOLSON" FILES

as we produce them, as files so



treated are comparatively valueless for use.

We have taken steps to have the parties thus engaged in deceiving the public, and trading upon our reputation, presented to the Courts for treatment, and will thank our friends having information bearing upon this subject to notify us, promptly, of any parties who have sold, or are offering for sale, "*Nicholson*" files doctored and labeled as above described.

Nicholson File Co.,

W. T. Nicholson, Agent.

Providence, R. I., Sept. 25th, 1873.

All packages of **NICHOLSON FILES** leaving our works bear a label on green paper like the one herewith attached.

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Steel Wire for Sewing Machine Needles and for other Purposes,
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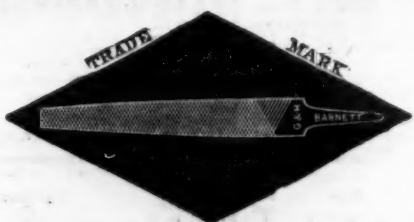
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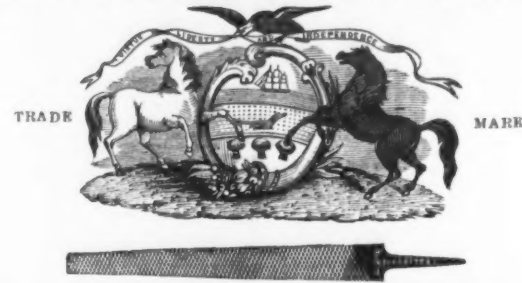
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Butchers' Cleavers,
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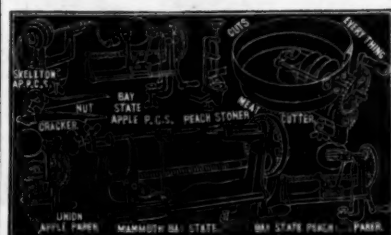
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Meat Cutter.

Cuts Everything for the Family.

Works extremely easy. The smallest size will cut one pound of Sausage Meat per minute, two pounds of Pie Meat per minute, and Hash for a family meal in one half a minute. Price, \$30 per dozen. Hotel size (three times the capacity). Price, \$75 per dozen. Have been sold for one year. The highest premiums were awarded on each of the two sizes at the New England Fair, in Boston, in 1870. Packed Half Dozen in Case.

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The best in use. All sizes on hand and for sale by

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Coal Shovels.	
Iron Handled.....	per doz, \$ 85 00
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Common Japanese.....	No. 11 15 16 17 19
Galvanized.....	\$7.00 \$7.50 \$8.00 \$8.50 per doz
Common Japanese.....	12.50 14.50 15.00 15.50 19.50
Galvanized.....	dis 50-100
dis 40-100	
Cocks.	
Brass Backing.....	dis 20-100
Lock and Globe.....	dis 20-100
Coffee Mills.	
Board and Box.....	dis 15
French Wilson's.....	new list dis 10
Senior's Pat.....	dis 10
French Small.....	\$7.50 \$10.50 dis 20
Champion.....	dis 20
Swift's.....	dis 20
Compasses and Dividers.	
Reinle.....	dis 15-15 @ 30-25
English.....	dis 20
Peck Stow & Wilcox.....	dis 20
Coppers Tools.	
Brass.....	dis 15-20
Chas. & Little.....	dis 15-20
Corn Knives and Cutters.	
Bradley's.....	dis 10
Crucibles.	
Gardner & Co.....	No. 8, 50c
Curry Combs.	
Hothelins and Kellogg's, Iron and Brass.....	dis 15
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Champion.....	dis 10
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Schweitzer Mfg. Co.....	dis 20
Carbide Pins.	
Silvered Glass.....	dis 40-100
Cutlery.	
American Table.....	dis 25
American Pocket.....	dis 25
Door Springs.	
G. & W.....	\$7.50 per doz dis 40-100
Torrey's Patent.....	\$7.50 per doz dis 40 @ 40-100
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"Silvered.....	8.00
Chisels.	
Japanese.....	per doz \$4.00 @ 6.00
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Bradley's.....	dis 60 @ 40-100
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Morr's Triple Acting Ratchet.....	dis 25
Arg. Cutters.	
Monroe.....	per doz net \$2.25 @ 3.50
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Genuine Chester—Regular Nos.....	per Bc dis 5 @ 10
Washington Mills—Regular Nos.....	per Bc
"Flour.....	per Bc
Enamelled and Tinned Ware.	
Kitchen.....	dis 10
Sauce Pan, Glass, Porc., &c.....	dis 15
Faucets.	
Cork Lined, Wood.....	dis 60
"Cork Stops.....	dis 40
Star.....	dis 50-100
French Cast Petroleum.....	dis 10
Taylor's Pattern.....	dis 20-100
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Nichols.....	\$5.00 to \$ currency
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Keeler.....	5.75 to \$ gold
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Jewett's.....	5.25 to \$ gold
W. & C. Pease's.....	5.50 to \$ gold
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Flined.....	dis 25
No.....	\$2.00 3.25 4.50 6.00 7.50 9.00 10.50
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Shingling, Nos. 123.....	per doz \$7.50 8.00 8.50
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No.	High Brass.	Low Brass.	Cop.
No. 20	0.41	0.45	0.51
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No. 24	0.47	0.51	0.57
No. 26	0.50	0.54	0.60
No. 28	0.53	0.57	0.63
No. 30	0.56	0.60	0.66
No. 32	0.59	0.63	0.69
No. 34	0.62	0.66	0.72
No. 36	0.65	0.69	0.75
No. 38	0.68	0.72	0.78
No. 40	0.71	0.75	0.81
No. 42	0.74	0.78	0.84
No. 44	0.77	0.81	0.87
No. 46	0.80	0.84	0.90
No. 48	0.83	0.87	0.93
No. 50	0.86	0.90	0.96
No. 52	0.89	0.93	0.99
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Ten cents per pound extra for Spooling.
(Brown & Sharpe's Gauge.)

Plain to No. 20 inclusive..... \$0.34
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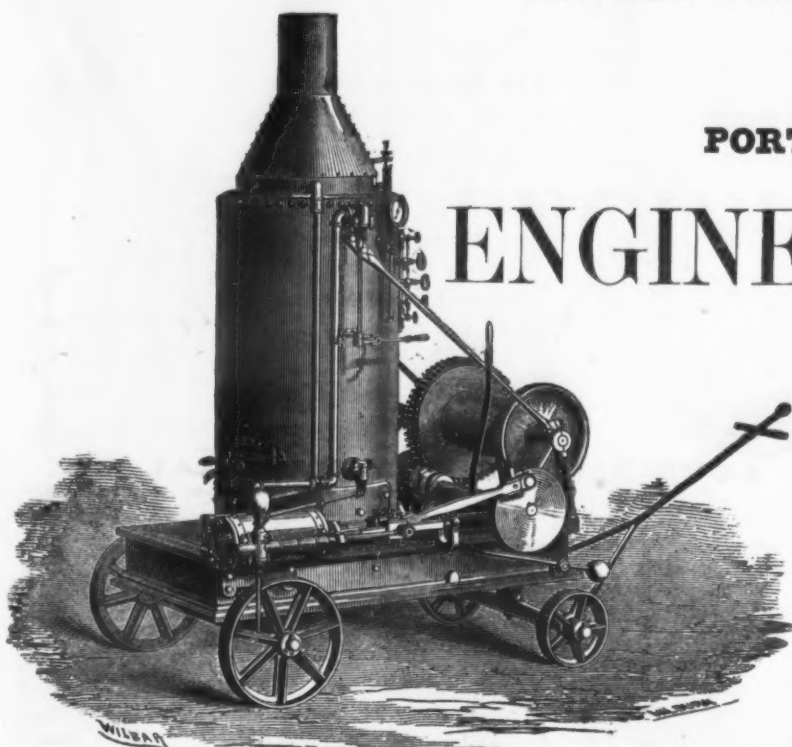
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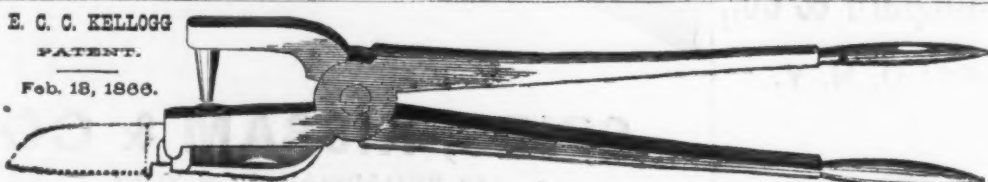
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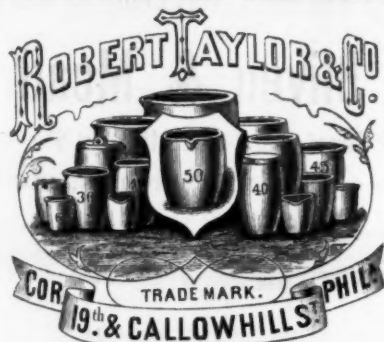
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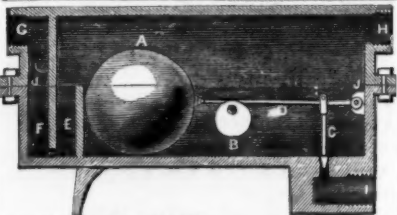
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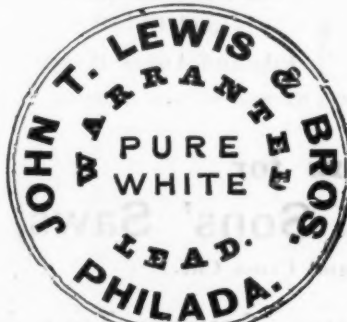
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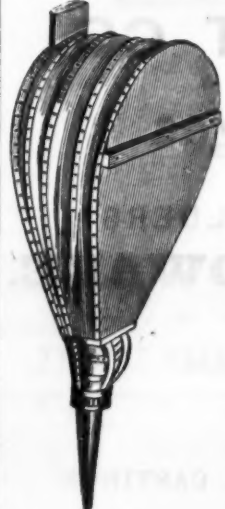
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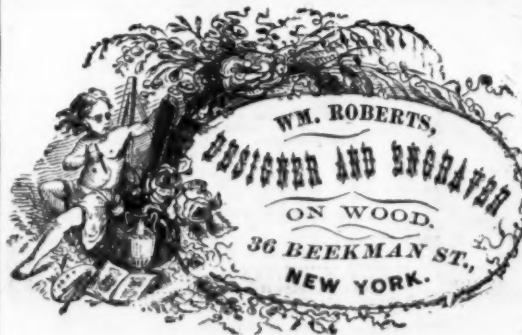
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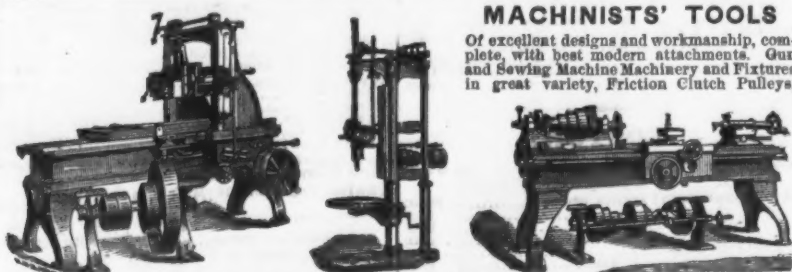
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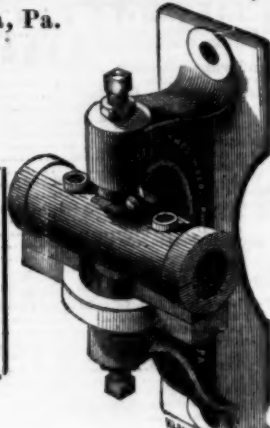
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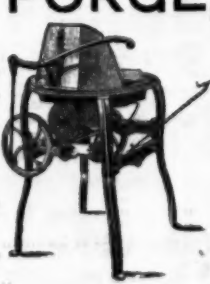
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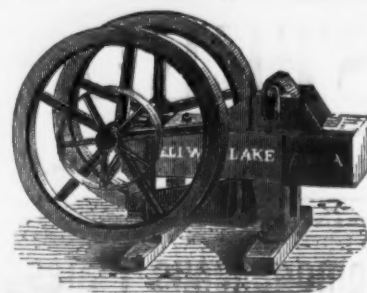
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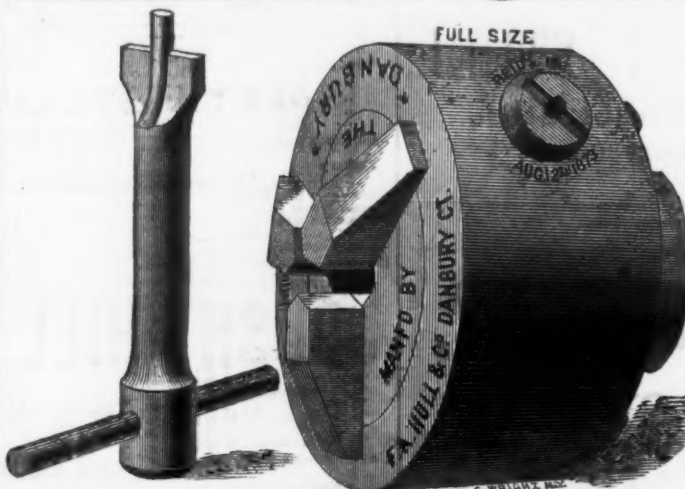
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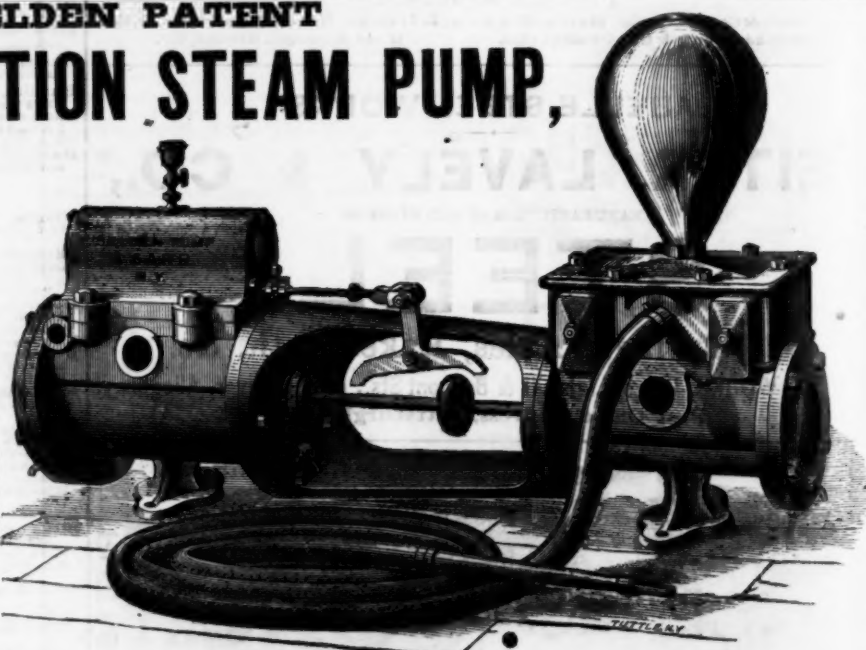
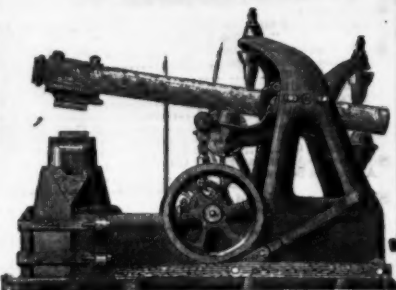
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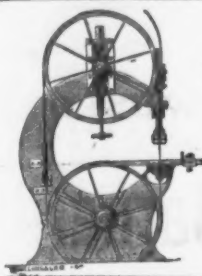
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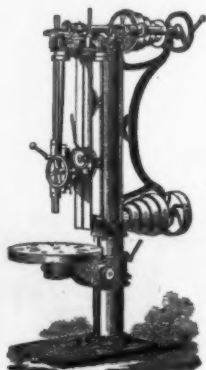
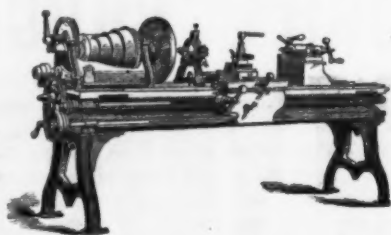
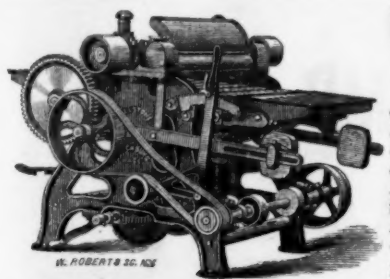
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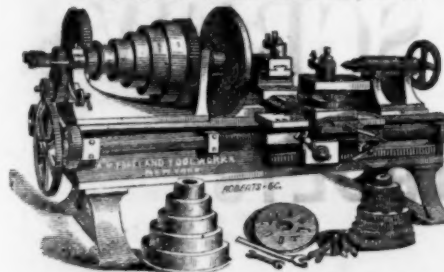
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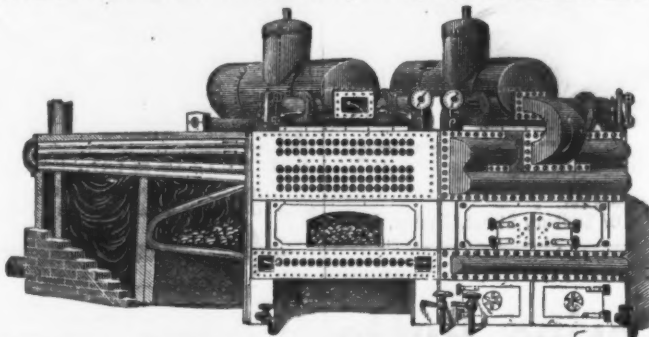
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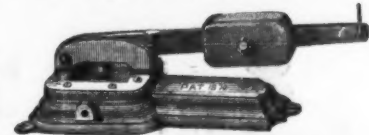
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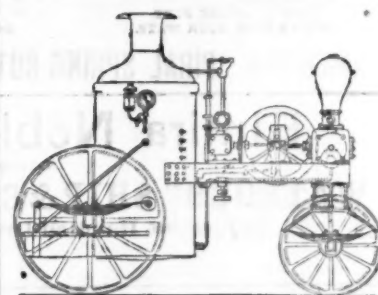
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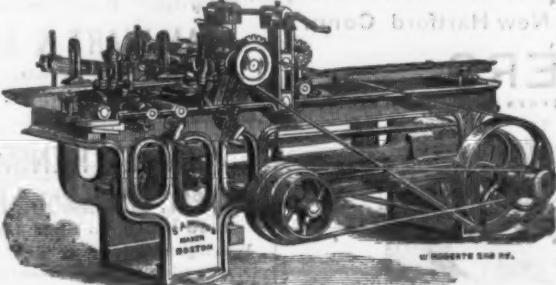
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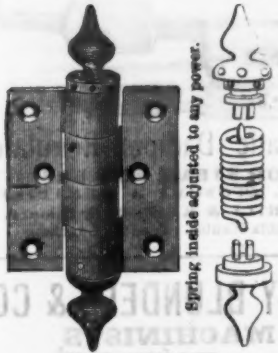
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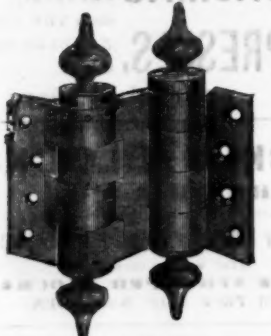
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